WHITE PAPER

VMware and BEA WebLogic Solutions Deployment Guide

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Note from the Author

This guide is primarily focused on helping three distinct types of audience:

1. Customers who are in the early stages of adopting VMware Infrastructure solutions.
2. Existing BEA WebLogic customers who are considering deploying VMware Infrastructure solutions.
3. Existing VMware customers who are considering implementing new BEA WebLogic application environments.

By using this guide, customers can reduce the cost and time to deployment of a BEA WebLogic Application Server environment on the VMware Infrastructure.

This deployment guide was developed as part of a joint solution development initiative between BEA and VMware.

We would like to thank the following team members for providing valuable support to roll out this deployment guide.

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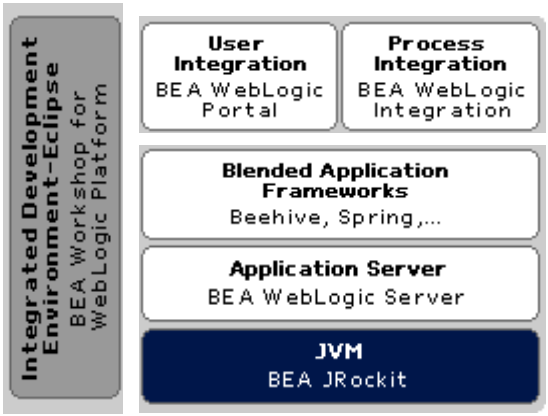
1.0 Introduction

BEA and VMware have been working on joint solution initiatives to provide customers with proven, scalable and optimized solutions of BEA software products on VMware Infrastructure. BEA WebLogic software platform is one of the most widely deployed application server in the IT industry today. By Leveraging the power of infrastructure virtualization solutions delivered by VMware, BEA and VMware are able to extend the reliability, availability, scalability, provisioning and Return of Investment (ROI) capabilities across the different stages of an enterprise BEA WebLogic Application Server deployment. This deployment guide discusses how BEA WebLogic solutions can be best deployed on VMware Infrastructure platform. It also showcases the key solutions that VMware virtualization technology brings to BEA WebLogic deployments.

1.1 BEA WebLogic Server

BEA offers products and services that enable enterprises to achieve faster time-to-value for critical business applications using open standards, web services and a Service-Oriented Architecture (SOA).



The BEA WebLogic® Platform 9.2 - which includes BEA WebLogic Server® 9.2, BEA WebLogic Portal® 9.2 , BEA WebLogic® Integration 9.2, BEA WebLogic Workshop®, BEA JRockit® 5.0—is the leading application platform suite for developers service-enabling their applications.

The most powerful, reliable release of the world's leading J2EE application server is the ideal foundation for building SOAs. BEA WebLogic Server® 9.2 is compliant with J2EE 1.4 specs and further extends the latest standards to deliver unparalleled quality-of-service across the enterprise.

BEA WebLogic Server includes a new BEA Smart Update tool that helps to easily download, apply and manage maintenance updates, including patches, to your BEA WebLogic Servers.

BEA WebLogic Server is a scalable, enterprise-ready Java Two Enterprise Edition (J2EE) application server. The WebLogic Server infrastructure supports the deployment of many types of distributed applications and is an ideal foundation for building applications based on Service Oriented Architectures (SOA) design methodology aimed at maximizing the reuse of application services.

1.2 BEA WebLogic Server Architecture

The WebLogic Server 9.2 is a complete implementation of the Sun Microsystems J2EE 1.4 specification that provides a standard set of APIs for creating distributed Java applications that can access a wide variety of services, such as databases, messaging services, and connections to external enterprise systems. End-user clients access these applications using Web browser clients or Java clients.

In addition to the J2EE implementation, WebLogic Server enables enterprises to deploy mission-critical applications in a robust, secure, highly available, and scalable environment. These features allow enterprises to configure clusters of WebLogic Server instances to distribute load, and provide extra capacity in case of hardware or other failures. New diagnostic tools allow system administrators to monitor and tune the performance of deployed applications and the WebLogic Server environment itself. You can also configure WebLogic Server to monitor and tune application throughput automatically without human intervention. Extensive security features protect access to services, keep enterprise data secure, and prevent malicious attacks

BEA WebLogic Server® provides the core services that ensure a reliable, available, scalable, and high-performing execution environment for your application. It includes Apache Beehive, a cross-container framework that provides a consistent, abstract, and easily toolable programming model, providing a way for developers to build applications more productively.

WebLogic Server implements Java 2 Platform, Enterprise Edition (J2EE) version 1.4 technologies. J2EE is the standard platform for developing multi-tier Enterprise applications based on the Java programming language. The technologies that make up J2EE were developed collaboratively by Sun Microsystems and other software vendors, including BEA Systems.

WebLogic Server J2EE applications are based on standardized, modular components. WebLogic Server provides a complete set of services for those modules and handles many details of application behavior automatically, without requiring programming.

J2EE defines module behaviors and packaging in a generic, portable way, postponing run-time configuration until the module is actually deployed on an application server.

J2EE includes deployment specifications for Web applications, EJB modules, Web Services, Enterprise applications, client applications, and connectors. J2EE does not specify *how* an application is deployed on the target server—only how a standard module or application is packaged.

For each module type, the specifications define the files required and their location in the directory structure.

Java is platform independent, so you can edit and compile code on any platform, and test your applications on development WebLogic Servers running on other platforms. For example, it is common to develop WebLogic Server applications on a PC running Windows or Linux, regardless of the platform where the application is ultimately deployed.

A BEA WebLogic Server™ J2EE application consists of one of the following modules or applications running on WebLogic Server:

- Web application modules—HTML pages, servlets, JavaServer Pages, and related files.
- Enterprise Java Beans (EJB) modules—entity beans, session beans, and message-driven beans.
- Connector modules—resource adapters.
- Enterprise applications—Web application modules, EJB modules, and resource adapters packaged into an application.

A Web application on WebLogic Server includes the following files:

- At least one servlet or JSP, along with any helper classes.
- A web.xml deployment descriptor, a J2EE standard XML document that describes the contents of a WAR file.
- Optionally, a weblogic.xml deployment descriptor, an XML document containing WebLogic Server-specific elements for Web applications.
- A Web application can also include HTML and XML pages with supporting files such as images and multimedia files.

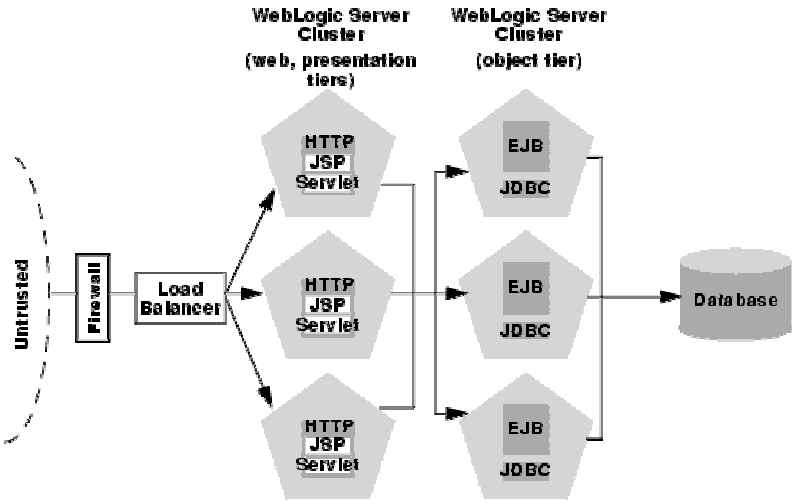


Figure 1.0

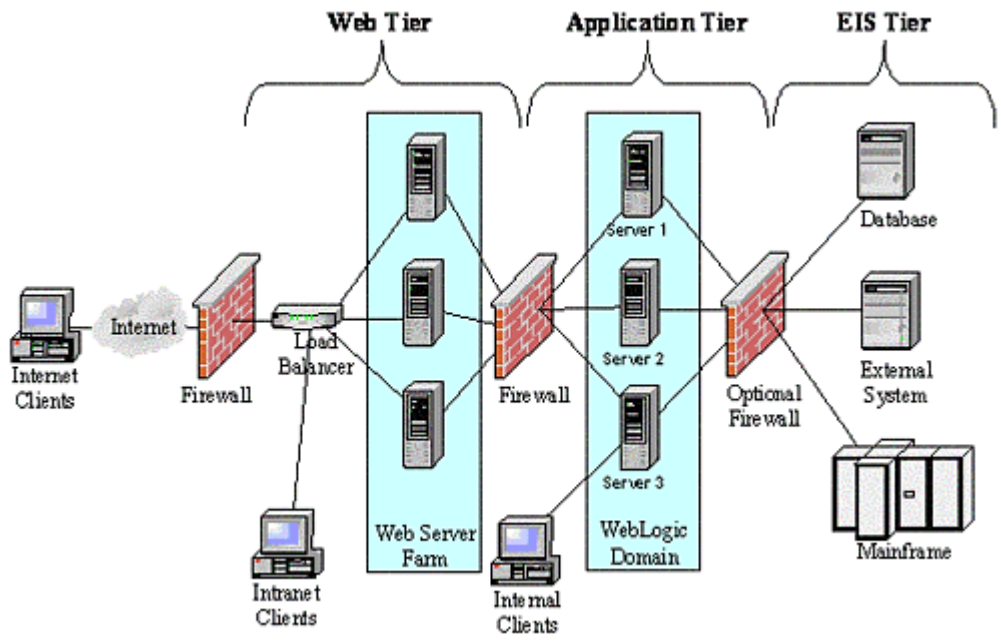


Figure 1.1

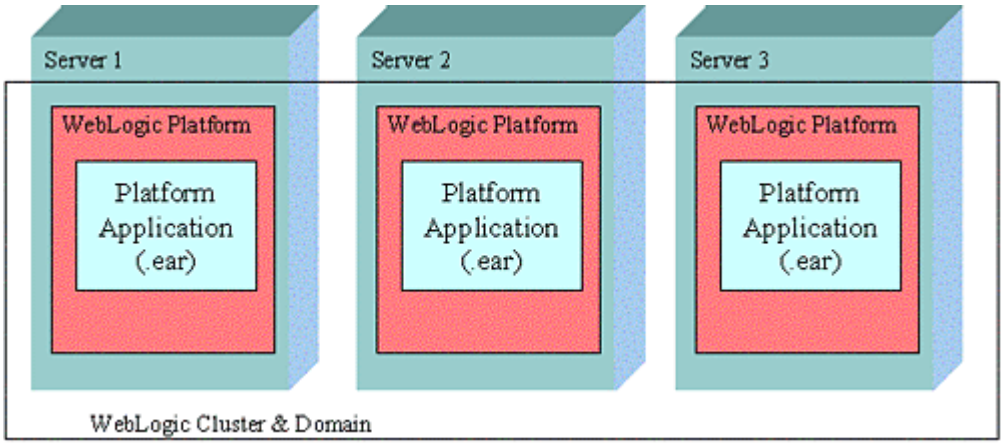


Figure 1.2

BEA WebLogic Application Server is available in two unique packages that are designed to meet a wide range of client requirements.

1. BEA WebLogic 9.0 Express
2. BEA WebLogic 9.0 Server

Our solution would focus on BEA WebLogic 9.2 Server environment with clustering and load balancing enabled.

1.3 VMware Infrastructure

VMware Infrastructure is the most widely deployed software suite for optimizing and managing IT environments through virtualization – from the desktop to the data center. The only production-ready virtualization suite, VMware Infrastructure is proven to deliver results at more than 20,000 customers of all sizes, used in a wide variety of environments and applications. The suite is fully optimized, rigorously tested and certified for the widest range of hardware, operating systems and software applications allowing for enterprise-wide standardization independent of operating systems and hardware. VMware Infrastructure provides built-in management, resource optimization, application availability and operational automation capabilities that deliver transformative cost savings as well as increased operational efficiency, flexibility and IT service levels.

VMware Infrastructure virtualizes and aggregates the underlying physical hardware resources across multiple systems and provides pools of virtual resources to datacenter in the virtual environment.
In addition, VMware Infrastructure brings about a set of distributed services that enables fine-grain, policy-driven resource allocation, high availability, and consolidated backup of the entire virtual datacenter. These distributed services enable an IT organization to establish and meet their production Service Level Agreements with their customers in a cost effective manner.

The relationships among the various components of the VMware Infrastructure are shown in figure 1.3.

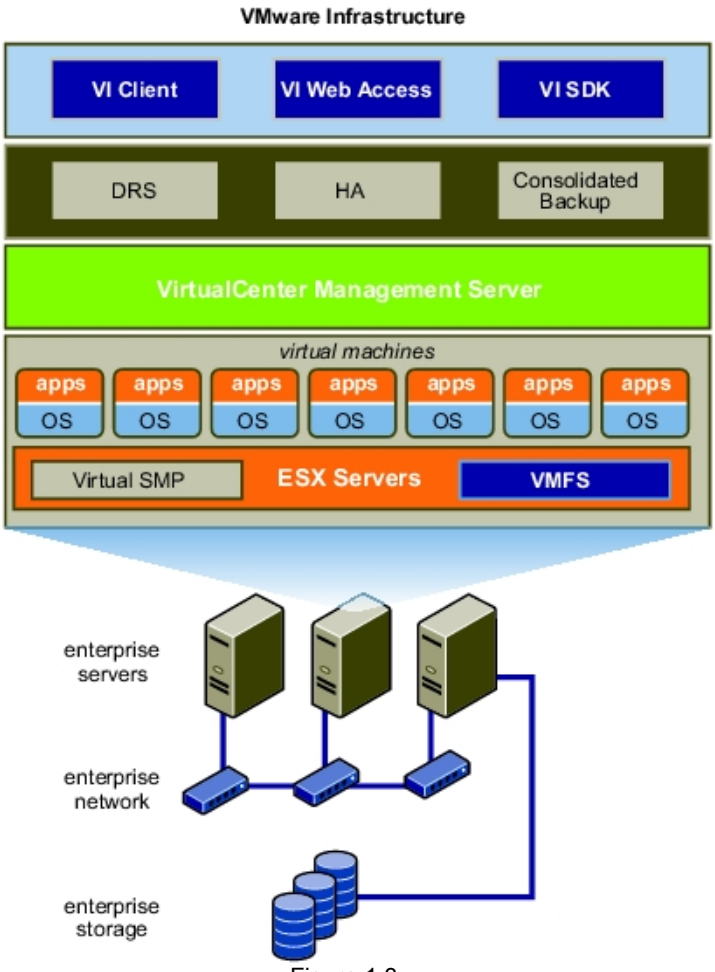


Figure 1.3

VMware Infrastructure includes the following components:

VMware ESX Server – A robust, production-proven virtualization layer run on physical servers that abstracts processor, memory, storage, and networking resources into multiple virtual machines.

VirtualCenter Management Server (VirtualCenter Server) – The central point for configuring, provisioning, and managing virtualized IT environments.

Virtual Infrastructure Client (VI Client) – An interface that allows users to connect remotely to the VirtualCenter Server or individual ESX Servers from any Windows PC.

Virtual Infrastructure Web Access (VI Web Access) – A Web interface that allows virtual machine management and access to remote consoles.

VMware Virtual Machine File System (VMFS) – A high-performance cluster file system for ESX Server virtual machines.

VMware Virtual Symmetric Multi-Processing (SMP) – Feature that enables a single virtual machine to use multiple physical processors simultaneously.

VMware VMotion – Feature that enables the live migration of running virtual machines from one physical server to another with zero down time, continuous service availability, and complete transaction integrity.

VMware HA – Feature that provides easy-to-use, cost-effective high availability for applications running in virtual machines. In the event of server failure, affected virtual machines are automatically restarted on other production servers that have spare capacity.

VMware Distributed Resource Scheduler (DRS) – Feature that allocates and balances computing capacity dynamically across collections of hardware resources for virtual machines.

VMware Consolidated Backup (Consolidated Backup) – Feature that provides an easy-to-use, centralized facility for agent-free backup of virtual machines. It simplifies backup administration and reduces the load on ESX Servers.

VMware Infrastructure SDK – Feature that provides a standard interface for VMware and third-party solutions to access the VMware Infrastructure.

Figure 1.4 illustrates the six basic components of virtualization infrastructure that are part of our deployment guide.

A single VirtualCenter manages multiple ESX Server hosts.

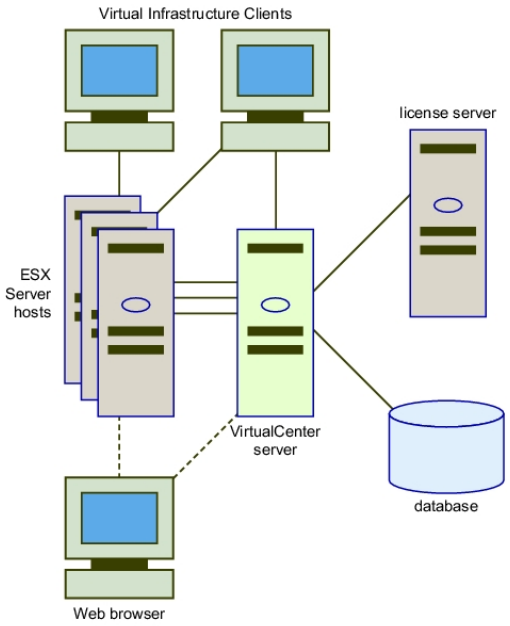
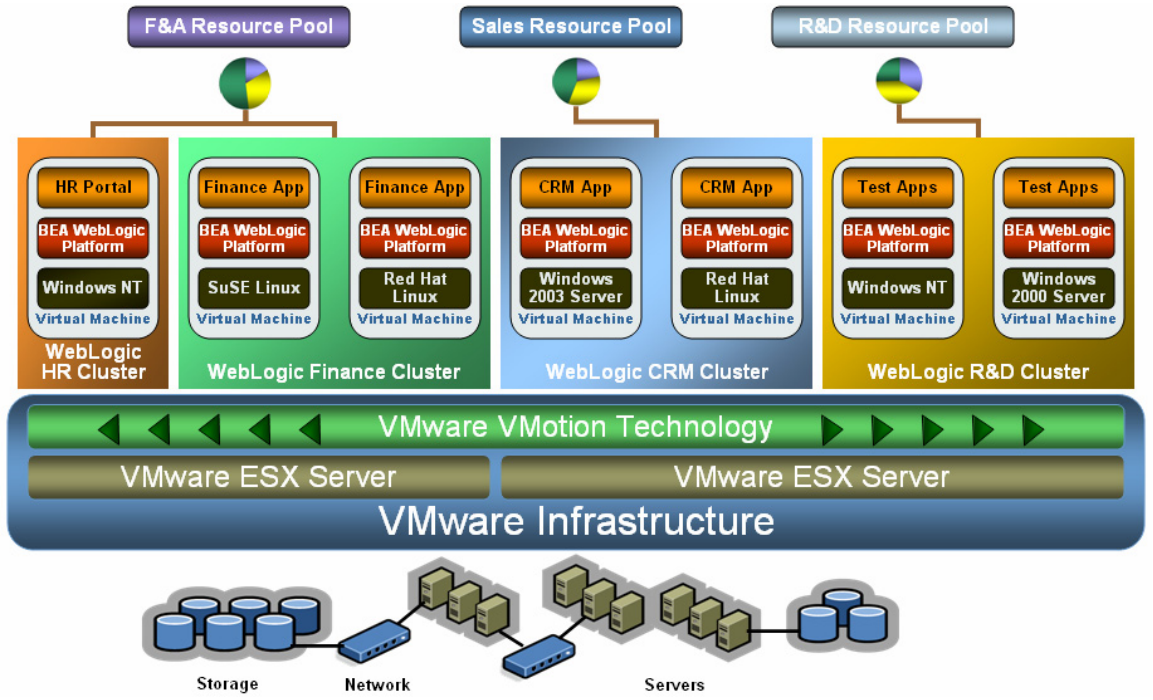


Figure 1.4

1.4 BEA–VMware Solution Architecture

This is a graphic representation of the architecture for running BEA WebLogic Applications on VMware Infrastructure. It demonstrates the ability to run several applications on same physical server by creating virtual machines containing the application, BEA WebLogic Platform and the operating system of choice. Using VMware Infrastructure enables deployment of virtual machines running different operating systems on the same physical server.



1.5 BEA-VMware Solutions

The BEA-VMware solutions delivers distinct value add to a BEA WebLogic application environment providing for high levels of server consolidation and rapid provisioning capabilities reducing the Total Cost of Ownership, cost and time to deployment of a BEA application environment..

1. Server Containment

In traditional BEA WebLogic deployments, there is significant server sprawl primarily due to the need to provision separate systems for development, test and production environments. Each developer would require his own system and each test cycle would require dedicated servers assigned for the duration of the tests. This leads to over provisioning, manageability and resource issues resulting in higher ownership and operational costs.

VMware's virtualization technology is able to contain server sprawl by running BEA WebLogic Servers in virtual machines consolidated onto fewer, highly scalable, reliable enterprise-class servers leading to increased server utilization.

Key Benefits:

1. Dedicated and isolated developer environments for all developers while consolidated to one physical system.
2. Multiple BEA WebLogic Servers on same physical system providing significant consolidation and lowering total cost of ownership (TCO).
3. Multiple OS and BEA WebLogic Server versions on the same system eliminating the need for dedicated hardware and provide for interoperability.
4. Multiple Test environments sharing same physical system eliminating the need for dedicated test systems.
5. Consolidate multiple BEA WebLogic Server applications with non BEA applications on the same physical system in production achieving lower TCO.

Customers using VMware Infrastructure have been able achieve significant levels of consolidation per physical processor, thereby drastically increasing server utilization and containing server sprawl.

2. Rapid Provisioning

VMware Virtualization solutions significantly reduce time to provision new BEA WebLogic (development, test or production) application environments. Typically, for a new deployment, it is required to procure new hardware, install the operating system and the applications. This process takes significant time and IT resources in addition to the need for dedicated hardware. While using VMware Infrastructure, BEA customers can take advantage of Virtual Machine Libraries and virtual machine templates to provision new pre-configured BEA WebLogic application environments in minutes on virtualized infrastructure hardware. This provides for rapid BEA WebLogic application deployments with sophisticated automation capabilities, centralized control and responsibility for hardware resources while giving business units and application owners complete control over how resources are utilized.

Key Benefits:

1. Rapid Provisioning of new BEA WebLogic Server instances from VM templates.
2. BEA WebLogic Server development images can be passed directly to testers.
3. Testers can pass BEA WebLogic Server virtual machine images back to development for problem replication and resolution.
4. Recreate distributed BEA WebLogic Server production environment in a single physical system for test purposes.
5. Move Test/QA BEA WebLogic Server instances to production in minutes.
6. Reset Test Images (after test completion) from templates and virtual machine libraries cutting down on test setup and reset time.
7. Store different BEA WebLogic Server and versions in virtual machine libraries that can be provisioned instantly.

8. Rollback Development and test images using virtual machine snapshots during problem resolution.
9. Rapid provisioning of additional BEA WebLogic Server instances during peak loads.

3. Change Management

Patching and upgrading existing applications is high on the list of IT challenges facing any BEA customer. IT departments face two key challenges in change management – testing patches and upgrades for compatibility with standard corporate hardware, OS and application configurations and efficiently deploying critical patches and upgrades throughout the enterprise. Traditionally, IT organizations need to procure hardware (mirroring production) and create test beds mirroring the OS and application configurations of the production environment. With VMware Infrastructure, customers can clone production or create a set of virtual machine libraries mirroring production which can then be used to provision the test environment. The latest patches and upgrades can then be tested against these virtual machines running BEA WebLogic applications, while eliminating the need for dedicated hardware to perform these tests. These patches can then be rolled into production with minimal interruption to end users. In case of problems, the virtual machines can be instantly rolled back using snapshots.

Key Benefits:

1. Faster change management with fewer system resource requirements.
2. Patches can be tested on multiple configurations (OS, BEA WebLogic Server versions etc) concurrently while hosted on the same physical system.
3. Instant rollback of BEA WebLogic Server virtual machines using snapshots (during problem resolution).
4. Add/Upgrade BEA WebLogic applications independent of other BEA WebLogic components in production.
5. Create a library of standard production configurations to perform change management testing and deployment.
6. Dynamically migrate BEA WebLogic Server virtual machine instances to other systems while performing maintenance or changes on the current physical system without disruption to end users.

4. Data Center Optimization: Distributed Resource Management

A VMware Infrastructure environment provides additional management capabilities that help optimize the infrastructure resources used by BEA WebLogic and non-BEA WebLogic applications in an enterprise data center. BEA WebLogic Server clustering is able to balance the loads between BEA WebLogic Server instances within a BEA WebLogic cluster while VMware Infrastructure solutions address resource management across the entire data center infrastructure and across multiple BEA WebLogic Server clusters**.** VMware Dynamic Resource Scheduler (DRS) dynamically allocates and balances computing capacity across a collection of hardware resources aggregated into logical resource pools. VMware DRS continuously monitors utilization across resource pools and intelligently allocates available resources among the virtual machines based on pre-defined rules that reflect business needs and changing priorities. When a BEA WebLogic Server virtual machine experiences an increased load, VMware DRS automatically allocates additional resources by redistributing virtual machines among the physical servers. VMware DRS optimizes IT environments to align resources with business goals while ensuring flexibility and efficient utilization of hardware resources.

Key Benefits:

1. Dynamically migrate development and test BEA WebLogic applications requiring additional capacity to the physical server with the optimal resource capacity.
2. Define resource pools, policies and priorities for different developer, test and production BEA WebLogic Server environments to efficiently manage resource allocation.
3. Allocate processor and memory resources to virtual machines running on the same physical servers and prioritize access to those resources across virtual machines.
4. Optimize BEA WebLogic Server deployment across a virtualized enterprise data center by providing reserved resource pools with pre-defined minimum and maximum resource requirements.
5. Resource Pools can be used to control resources available for BEA WebLogic and non-BEA WebLogic application environments.
6. Guaranteed IT autonomy and service levels to applications and business organizations.

7. Automate physical server maintenance by dynamically relocating BEA WebLogic Server virtual machines without disruption to end users.
8. Optimize the service level of distributed applications by controlling the aggregate allocation of resources for the entire set of virtual machines running the distributed BEA WebLogic and non-BEA WebLogic application environments.

5. High Availability: Business Continuity and Disaster Recovery

VMware Virtualization works alongside BEA WebLogic Server clustering to deliver enhanced infrastructure and application high availability for critical business functions. Using VMware Infrastructure, customers can implement a unified disaster recovery (DR) platform that allows many production BEA WebLogic Server virtual machines to be recovered in the event of hardware failure without investing in costly one-to-one mapping of production and DR hardware**.** While a BEA WebLogic Server cluster consists of multiple BEA WebLogic Server instances running simultaneously and working together to provide application failover and load-balancing, VMware VMotion™ enables the live migration of running BEA WebLogic Server virtual machines from one physical server to another with zero downtime, continuous service availability, and complete transaction integrity. Live migration of virtual machines enables companies to perform hardware maintenance without scheduling downtime and disrupting business operations. VMware HA provides easy to use, cost effective high availability for BEA WebLogic applications running in virtual machines. In the event of physical server failure, affected BEA WebLogic Server virtual machines are automatically restarted on other physical servers that have spare capacity. VMware HA minimizes downtime and IT service disruption while eliminating the need for dedicated stand-by hardware and installation of additional software. VMware HA provides uniform high availability across the entire virtualized IT environment without the cost and complexity of failover solutions tied to either operating systems or specific applications. VMware Consolidated Backup provides an easy to use, centralized facility for LAN-free backup of virtual machines. VMware Consolidated Backup simplifies backup administration and reduces the load for ESX Servers.

Key Benefits:

1. Development and Test Images can be saved for backup, audit etc using snapshots and consolidated backup.
2. Layers of Images can be saved for regression (ie, keep exact version of OS, BEA WebLogic Server, patches, state etc.) using snapshots and backup.
3. Snapshots enable point in time restores and rollbacks during test and development problem resolution.
4. Automatic failure detection of physical servers running the BEA WebLogic Servers in production.
5. Ensure capacity availability to support BEA WebLogic Server virtual machine failovers.
6. Automatic restart of failed BEA WebLogic Server virtual machines using VMware HA.
7. Full and incremental file backup of virtual machines using VMware consolidated backup
8. Full image backup of BEA WebLogic Server virtual machines for disaster recovery
9. Migration of BEA WebLogic Server virtual machines from failing server hardware using Live Migration without disruption to end users.
10. Restore from snapshots and backups during system failures or disaster recovery
11. Failover over SAN during disaster recovery by using SAN replication and restarting BEA WebLogic Server virtual machines in DR sites.

The BEA-VMware solution discussed in this document will focus on addressing three distinct value propositions that VMware product suite brings to an Enterprise BEA WebLogic deployment. The focus of this deployment guide is on Server Containment, Rapid Provisioning and Change Management.

The key features of VMware Infrastructure discussed in this deployment guide (including templates, cloning, snapshots, P2V etc.) can be directly leveraged to provide all of the benefits discussed above.

1.6 Deployment Approach Summary

The deployment approach for implementing a BEA WebLogic Application server environment on VMware infrastructure has been summarized in the following steps.

1. Install and configure your VMware Infrastructure 3 environment including ESX Server, VirtualCenter and VMware Infrastructure client to manage ESX Server hosts.
2. Create a virtual machine and install all the BEA WebLogic Server components that should be part of a base image.
    - The base image could contain the BEA WebLogic software and node manager installed as a windows service.
    - Install any additional software (IT tools, anti-virus, management agents etc.) that need to be part of the base virtual machine image.
3. Create a VM template from the base virtual machine. This template will be used to provision BEA WebLogic application server nodes.
    - This template will act as the standard template for deployment across your BEA WebLogic environment
    - You can create additional templates if desired so you have multiple standard images for different layers and applications of the BEA environment.
4. Create BEA WLS nodes (Admin server, HTTP proxy, Managed servers etc.) from the template and perform OS and application customization specific to your BEA environment. Configure the customized load balanced BEA Domain.
    - OS customization would include changes to Windows SID, network configuration, hostname, license keys etc.
    - Application customization would include configuring the different WLS nodes that are part of a BEA domain environment.
    - You can consider building customization scripts that can be invoked as part of the cloning process.
5. If you would like to upgrade or patch your BEA WLS environment, consider using
    - Snapshots while directly upgrading production BEA WLS nodes. This will ensure prompt rollback to stable state in case of upgrade issues.
    - "VM Cloning" to create a clone of production BEA WLS nodes and migrate it to a test or development environment.
        - Create a private network or add your cloned VM to another network (test or development) that does not see the production VM so you can retain the same network attributes of the production VM.
        - Apply all upgrades and patches, test and validate functionality
        - Migrate the upgraded clone into production VM by just moving the VM network back to the production and taking your existing production VM out of network.
6. If you already have existing BEA WLS environment on a physical system, use VMware P2V Assistant (P2V) to migrate the physical BEA WLS nodes to virtual machines. This will help consolidate the physical BEA WLS nodes on ESX Server(s), while retaining the integrity and validity of the configurations in your BEA environment.
    - Build a target virtual machine and create the target virtual disk
    - Recommended to create the target virtual disk to be of the same size as the source disk.
    - Install P2V on another VM (called helper VM) which has the same OS as the source (physical) system.
    - Attach the target disk created to the helper VM
    - Boot source system using P2V boot disk
    - Clone the source disk(s) to the target disk(s) using P2V
    - Reconfigure target virtual disk to make it bootable.
    - Detach the target virtual disk from helper VM
    - Boot the target virtual machine from the target virtual disk to bring up the virtual machine BEA WLS node.

7. If you need to relocate virtual machines from one ESX Server host to another ESX Server, consider:
   - Cold migration of the virtual machines to move the VM files to a different storage location or ESX Server host.
   - Live migration (with VMware VMotion) to move online VMs to other ESX Server hosts.

1.7 Lab Environment

Find below a summary of our lab setup. The deployment guide makes references to the different virtual machines as you go through the deployment steps.

BEAVMBase – Base virtual machine image
BEAVM_Template – Virtual machine template used to provision WAS nodes using “cloning”
BEAVM1 – BEA WLS Admin Server node, HTTP Proxy server (Managed Server 1)
BEAVM2 – Managed Server 2 node
BEAVM3 – Managed Server 3 node
BEAVP2VVM – BEA WLS node on physical system converted to a virtual machine
Physical BEA node – run on a Dell system
ESX host IP – 10.16.27.16, 10.16.27.17

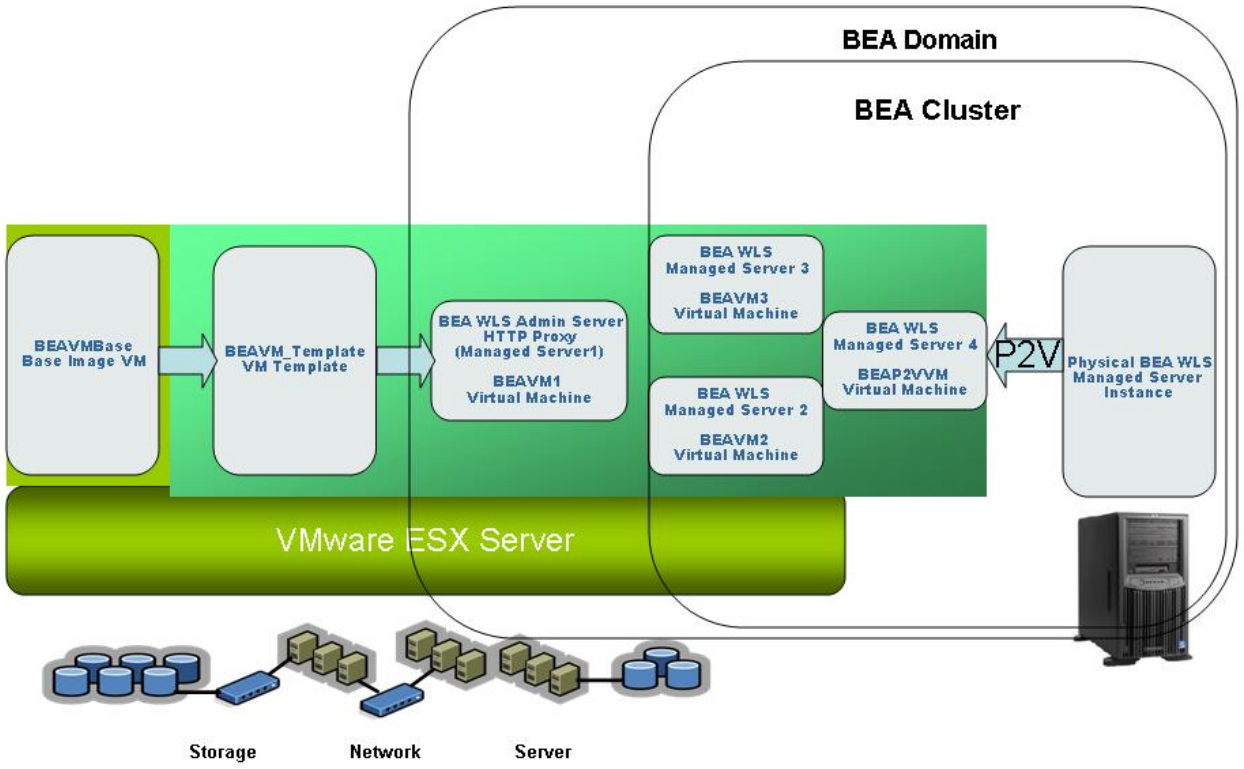


Figure 1.6

2.0 Installation of VMware Infrastructure 3 Environment

This section will focus on the installation of the following VMware Infrastructure 3 components:

1. VMware VirtualCenter 2 and license server
2. Virtual Infrastructure Client
3. VMware ESX Server 3

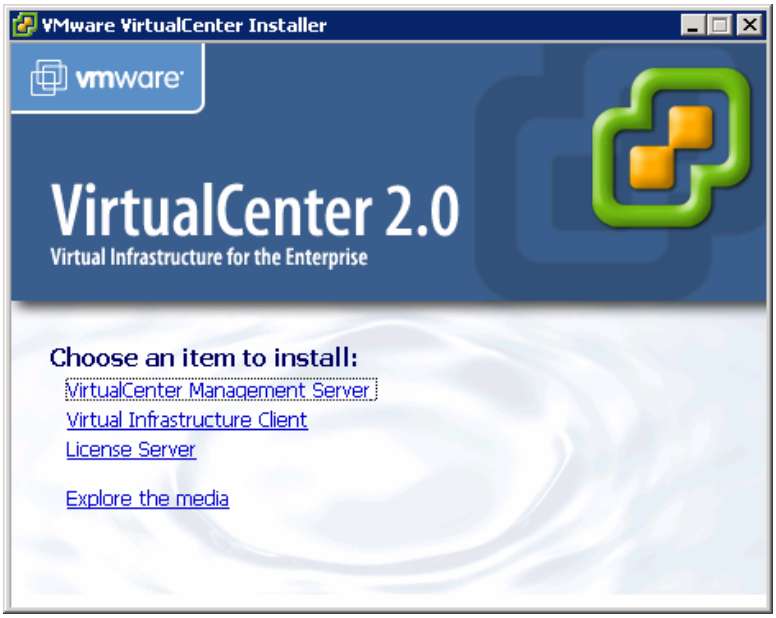
Prior to installing VirtualCenter you will have to decide between host based or server based licensing. ESX Server hosts have the option of having local license files (host based) or server based licensing. Since VMware Infrastructure 3 is a data center infrastructure, it is easier to manage licenses for multiple ESX Server hosts using centralized server based licensing. Our installation used server based licensing.

For details on licensing options, refer to the VMware Infrastructure 3 product documentation at www.vmware.com .

2.1 Installing VMware VirtualCenter 2

Access the CD or downloaded s/w (zip file should be unzipped).

Click "Autorun"

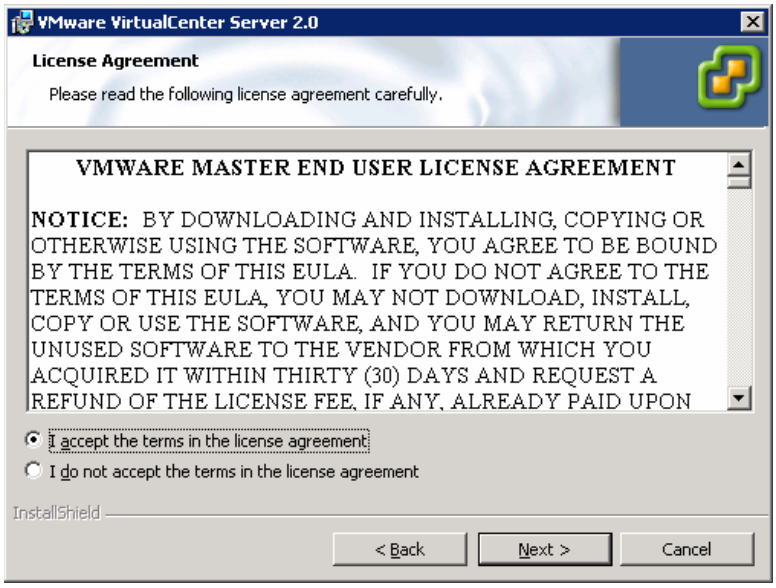


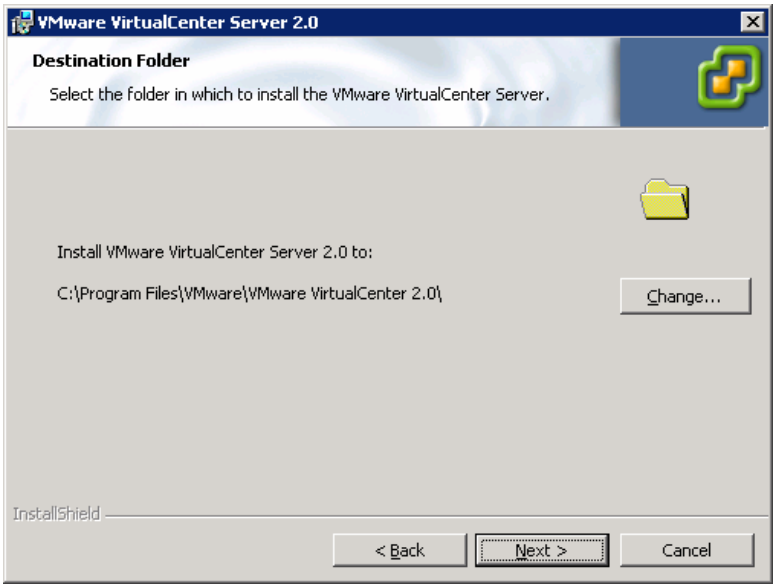
Click on VirtualCenter Management Server

VMware VirtualCenter Server 2.0
Welcome to the installation wizard for VMware VirtualCenter Server 2.0
The installation wizard will install VMware VirtualCenter Server 2.0 on this computer. To continue, click Next.
VirtualCenter 2
Virtual Infrastructure for the Enterprise
This program is protected by copyright law and international treaties.
Build version: 2.0.0.27704
Next >
Cancel

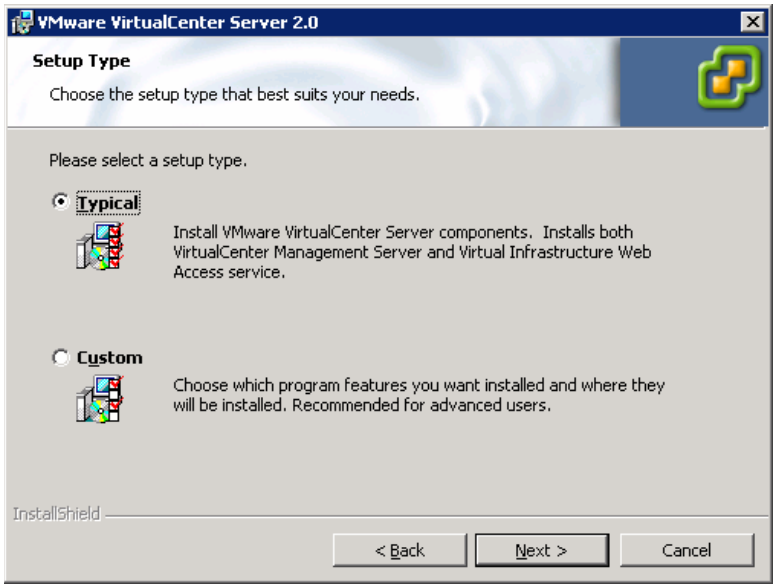
The VMware VirtualCenter version 2 default installation includes the following components:

VirtualCenter Server – A windows service to manage ESX Server hosts
.Net Framework – Software used by the VirtualCenter server and VI client.
Web Access – Web Server to allow browser-based virtual machine management.
Web Service – Software Development kit (SDK) for VMware products.
License Server – A windows service allowing all VMware products to be licensed from a central pool and managed from one console.

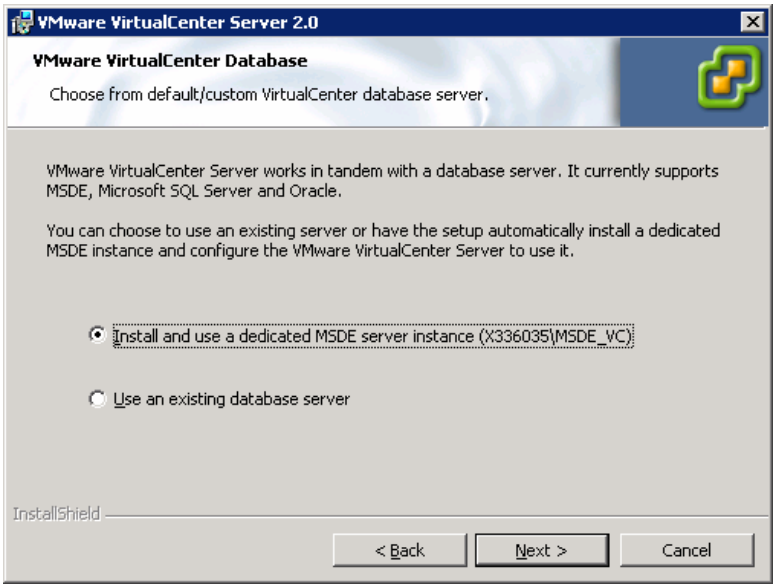

VMware VirtualCenter Server 2.0
License Agreement
Please read the following license agreement carefully.
VMWARE MASTER END USER LICENSE AGREEMENT
NOTICE: BY DOWNLOADING AND INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE, YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MAY NOT DOWNLOAD, INSTALL, COPY OR USE THE SOFTWARE, AND YOU MAY RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, ALREADY PAID UPON
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel



Take the default folder offered or provide the appropriate folder in which you want to install the VirtualCenter server.


VMware VirtualCenter Server 2.0
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Typical
Install VMware VirtualCenter Server components. Installs both VirtualCenter Management Server and Virtual Infrastructure Web Access service.
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

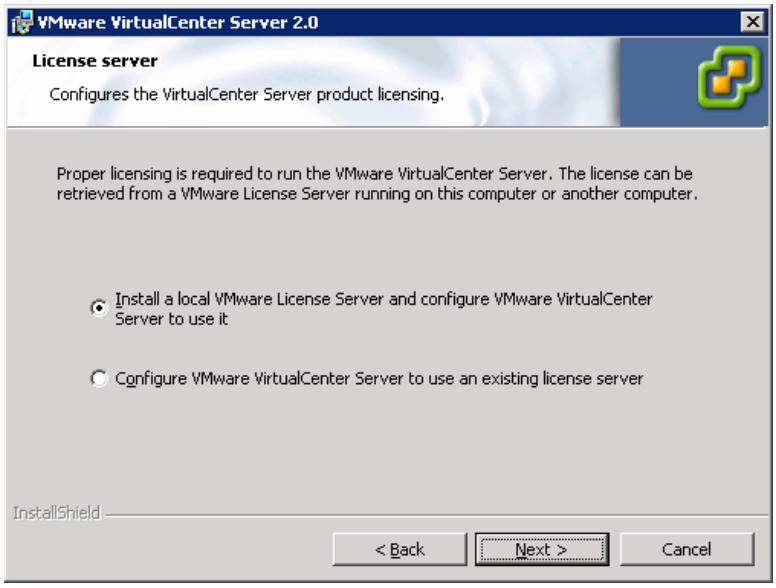
Select typical install.


VMware VirtualCenter Server 2.0
VMware VirtualCenter Database
Choose from default/custom VirtualCenter database server.
VMware VirtualCenter Server works in tandem with a database server. It currently supports MSDE, Microsoft SQL Server and Oracle.
You can choose to use an existing server or have the setup automatically install a dedicated MSDE instance and configure the VMware VirtualCenter Server to use it.
Install and use a dedicated MSDE server instance (X336035\MSDE_VC)
Use an existing database server
InstallShield
< Back
Next >
Cancel

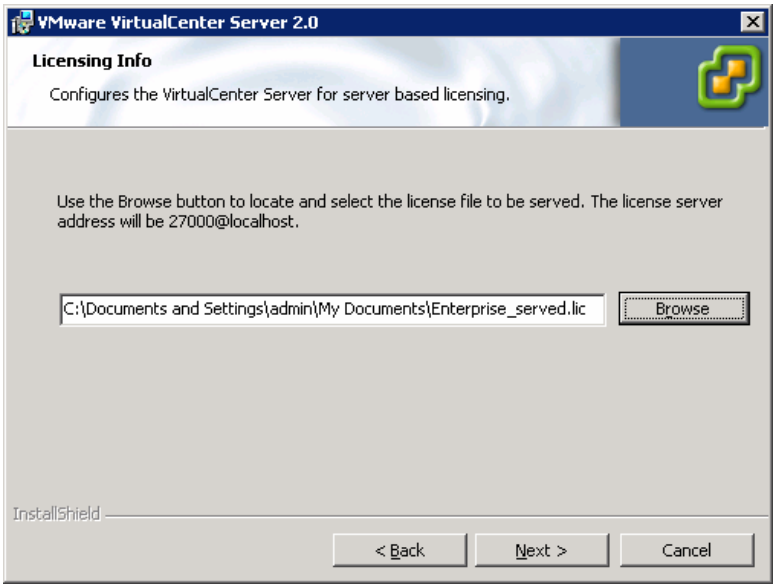
VirtualCenter server requires a database to store and organize server data. VirtualCenter 2 supports Oracle, SQL server and Microsoft MSDE. The VirtualCenter Management Server requires administration credentials (ID and password) to log on to the database. Pls. refer to the VMware documentation for configuring your production database for VirtualCenter 2.

The lab installation used a MSDE database for VirtualCenter installation.

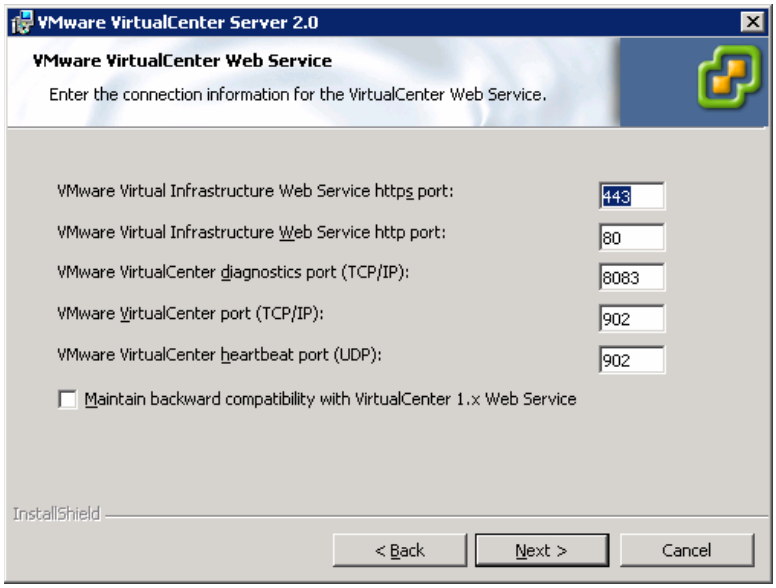
Note: MSDE is not supported for production environments.


VMware VirtualCenter Server 2.0
License server
Configures the VirtualCenter Server product licensing.
Proper licensing is required to run the VMware VirtualCenter Server. The license can be retrieved from a VMware License Server running on this computer or another computer.
Install a local VMware License Server and configure VMware VirtualCenter Server to use it
Configure VMware VirtualCenter Server to use an existing license server
InstallShield
< Back
Next >
Cancel

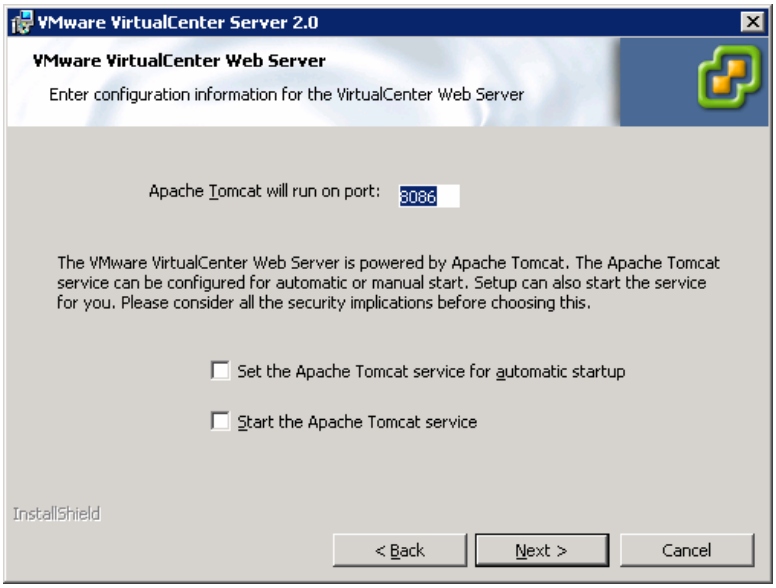
Install the license server that will be used by VirtualCenter as well as the ESX Servers (hosts). The lab setup used “server based licensing” for the VMware Infrastructure 3 ESX Server hosts.


VMware VirtualCenter Server 2.0
Licensing Info
Configures the VirtualCenter Server for server based licensing.
Use the Browse button to locate and select the license file to be served. The license server address will be 27000@localhost.
C:\Documents and Settings\admin\My Documents\Enterprise_served.lic
Browse
InstallShield
< Back
Next >
Cancel

The license file can be downloaded from VMware or sent to the customers by email. Save the file and provide the file location information.

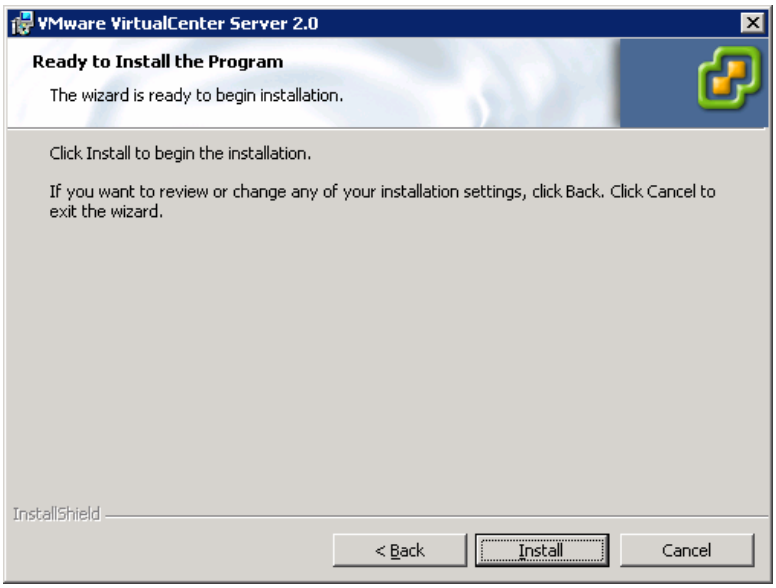


Accept the default ports unless you want to specifically assign you own port information.


VMware VirtualCenter Server 2.0
VMware VirtualCenter Web Server
Enter configuration information for the VirtualCenter Web Server
Apache Tomcat will run on port:
8086
The VMware VirtualCenter Web Server is powered by Apache Tomcat. The Apache Tomcat service can be configured for automatic or manual start. Setup can also start the service for you. Please consider all the security implications before choosing this.
Set the Apache Tomcat service for automatic startup
Start the Apache Tomcat service
InstallShield
< Back
Next >
Cancel

Take the default. You can optionally set them to start automatically. This Web server provides web browser access to Virtual Center server.

Note: these ports might need to be opened if you need to access Virtual Center **server through the firewall.**

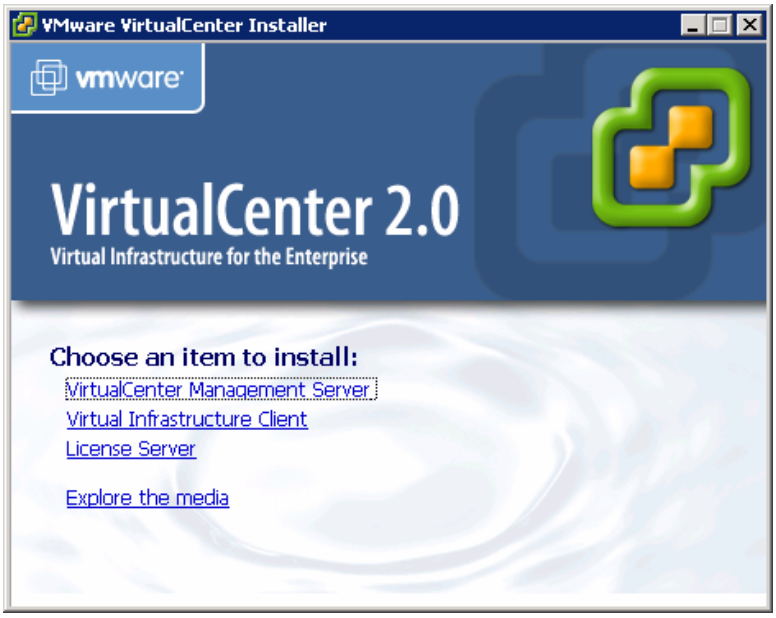

VMware VirtualCenter Server 2.0
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Once you click " install", the installer will install the VirtualCenter 2 server, license server, install and configure MSDE database .net Framework 1.1, VirtualCenter Repository etc.

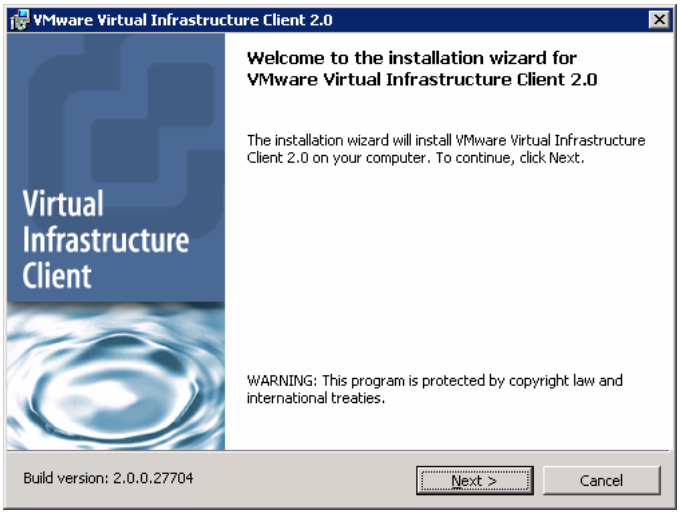
2.2 Installing Virtual Infrastructure Client

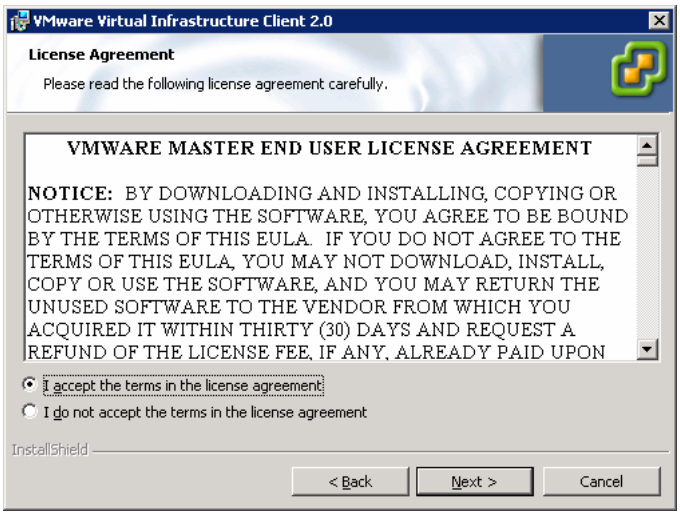
Refer to your product documentation for specific requirements for the Virtual Infrastructure (VI) client.

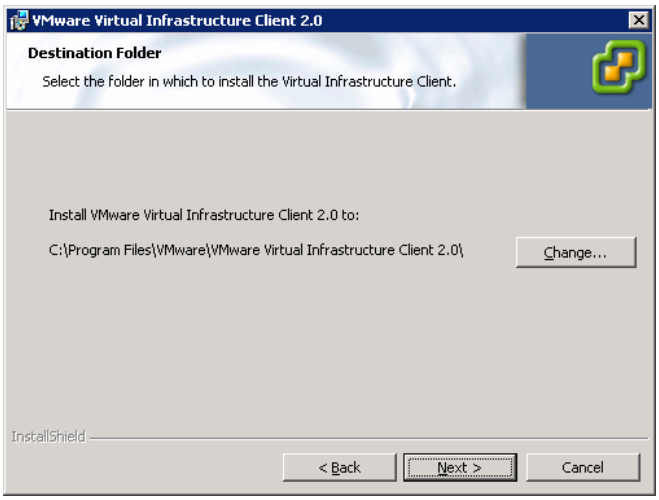
Run "autorun.exe" from the installer CD or from the downloaded (unzipped) file.



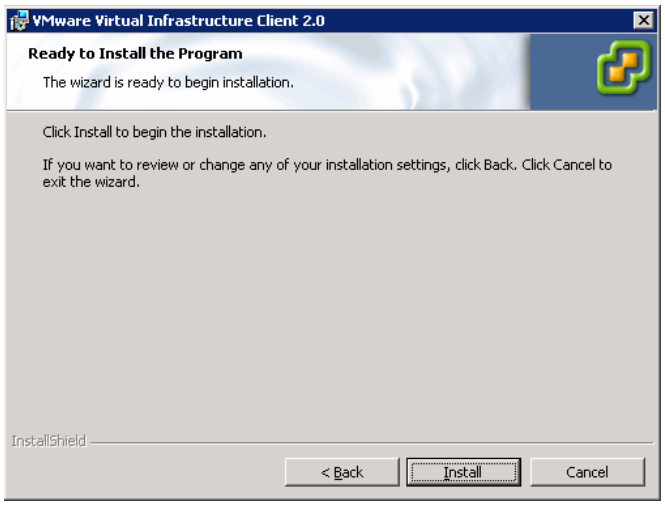
Click on Virtual Infrastructure Client.

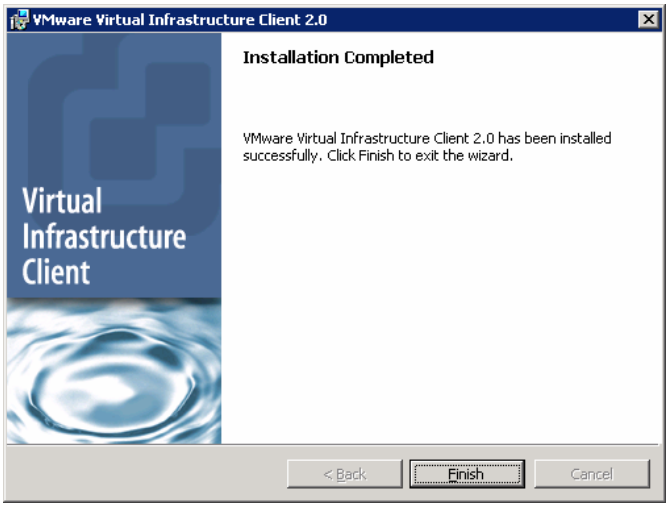

VMware Virtual Infrastructure Client 2.0
Virtual Infrastructure Client
Welcome to the installation wizard for VMware Virtual Infrastructure Client 2.0
The installation wizard will install VMware Virtual Infrastructure Client 2.0 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
Build version: 2.0.0.27704
Next >
Cancel


VMware Virtual Infrastructure Client 2.0
License Agreement
Please read the following license agreement carefully.
VMWARE MASTER END USER LICENSE AGREEMENT
NOTICE: BY DOWNLOADING AND INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE, YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MAY NOT DOWNLOAD, INSTALL, COPY OR USE THE SOFTWARE, AND YOU MAY RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, ALREADY PAID UPON
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel


VMware Virtual Infrastructure Client 2.0
Destination Folder
Select the folder in which to install the Virtual Infrastructure Client.
Install VMware Virtual Infrastructure Client 2.0 to:
C:\Program Files\VMware\VMware Virtual Infrastructure Client 2.0\
Change...
InstallShield
< Back
Next >
Cancel

Take the default directory or provide the appropriate folder for VI client installation.

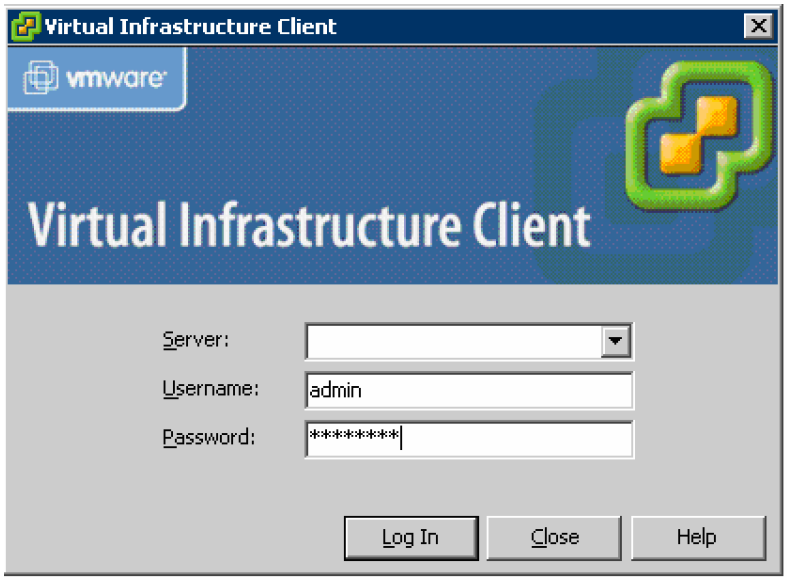

VMware Virtual Infrastructure Client 2.0
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel


VMware Virtual Infrastructure Client 2.0
Virtual Infrastructure Client
Installation Completed
VMware Virtual Infrastructure Client 2.0 has been installed successfully. Click Finish to exit the wizard.
< Back
Finish
Cancel

Exit the installer at this point. You have installed VirtualCenter 2 Management Server, Database, license server and VI client. The license server will be used to support the ESX Server hosts.
It is recommended to install the license server on the same box as the VirtualCenter server.

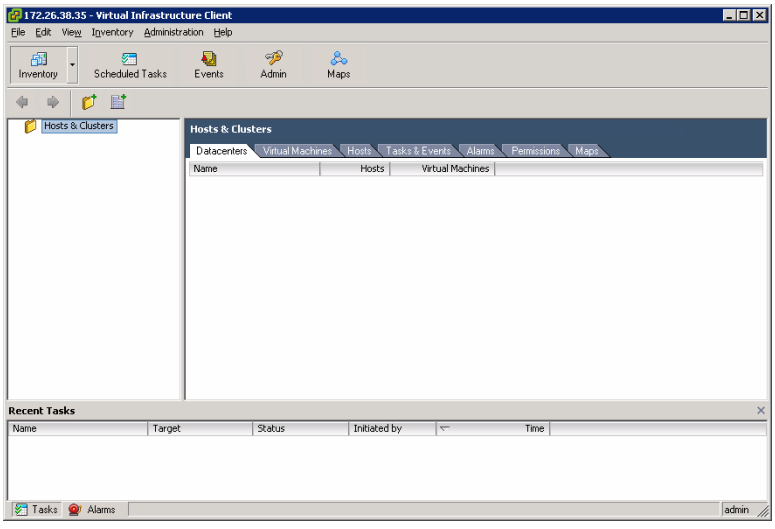
2.3 Configuring VirtualCenter for Server Based Licensing

Start the VI client from your start menu or from the desktop icon.

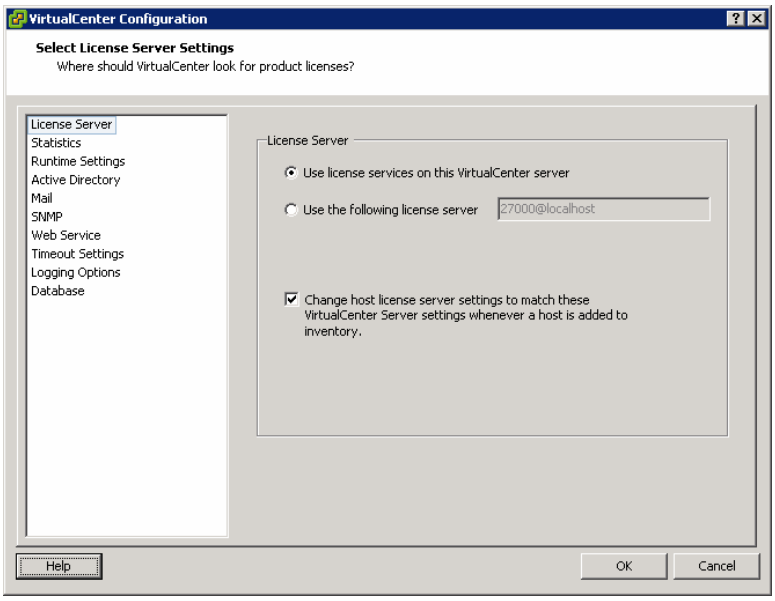


Pls. provide the virtual server hostname or IP.

Username: < admin user of windows environment>
Password: < password>



Go to “administration” → “server setting” in the drop down menu.



Specify if the license server is on another system (**note: 27000 is the default port used by license server**) or on the same host as VirtualCenter. The lab installation had the license server (with licenses) on the same host as VirtualCenter.

Check "change host license server settings…." option. This will help override the host's license settings and will force the ESX Server hosts to use the license (server based) settings used by VirtualCenter.

Note: If you are likely to have a mix of host based and server based licensing for ESX Server, do not check mark this box.

2.4 VMware ESX Server 3 Installation

The VMware ESX Server Version 3 installation includes the following components:

VMware ESX Server – Software to manage and serve virtual machines.
VMware Web Access – Software to allow web browser access to the ESX Server host.

Put the ESX Server 3 CD in the cdrom drive. "Power on" the machine.

Wait for the ESX Server 3 Boot prompt. For Graphical mode install press "Enter"

On ESX Server 3 installer wizard screen press "next"

Take the appropriate defaults (as displayed) for Language (English), Mouse, etc.

Agree to the license agreement

Select the disk drive on which to install ESX Server.

Take the "Recommended" option unless you want to manually create all the partitions on the disks for the ESX Server install. We used a SCSI disk of 70GB size.

Note: The installer displays a warning if you attempt to install ESX Server software on an IDE drive or a SATA drive in ATA emulation mode. VMFS is not supported on IDE or SATA. An ESX Server host must have SCSI storage, NAS, or a SAN on which to store virtual machines. See "selecting a boot drive" in the ESX Server installation documentation for all boot disk options.

Click "yes" when prompted with "are you sure you want to remove all partitions on the drive".

Take the “default” partitioning information for the disk partitions.

For ESX Server boot specification,

Take the default (from a drive – install on the MBR of the drive).

Provide the network interface to be used and configure the network address and host name. You can use DHCP or provide the network information manually.

Note: initially ESX Server as well as the Virtual machines (VM) created will share this network interface. You can create additional network interfaces for the virtual machines after installing ESX Server (using the VI client).

It is recommended to use static IP for ESX Server hosts to simplify access and management of the Virtual Infrastructure through the VI client.

Provide all the appropriate network parameters.
Our lab installation used:
IP address10.16.27.17
Subnet mask: 255.255.0.0
Gateway: 10.16.15.254
Hostname: se-017
VLAN ID:

Check “create a default network for VMs”.

Enter your root password.

Click “next” on the ESX Server install summary page.

Installation will now begin.

Once installation is complete, the system will reboot and you can access the ESX Server from VI client or web browser using the ESX Server IP address. We will be using the VI client and the VirtualCenter to manage our ESX Server. Log file for the installation is located at /root/install.log.

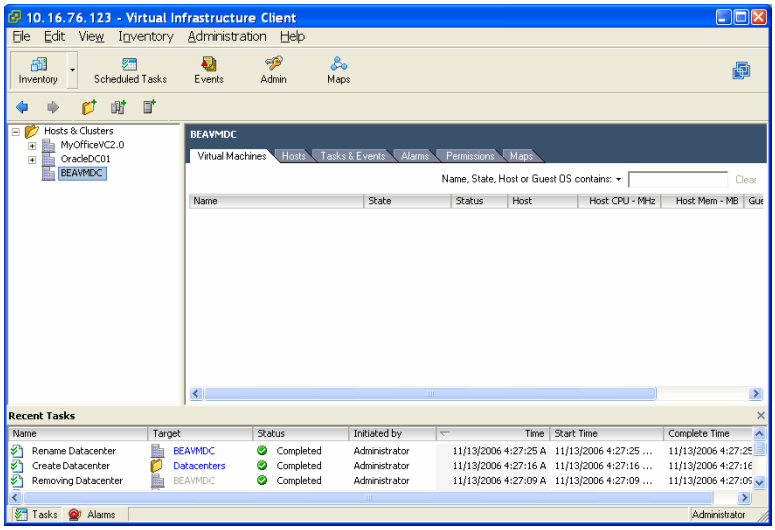
3.0 VMware ESX Server Management with VirtualCenter

In this section, we will focus on the following steps:

1. Add ESX Server host to VirtualCenter
2. Configure ESX Server host for server based licensing
3. Create a virtual machine (VM)
4. Install the guest operating system on the VM

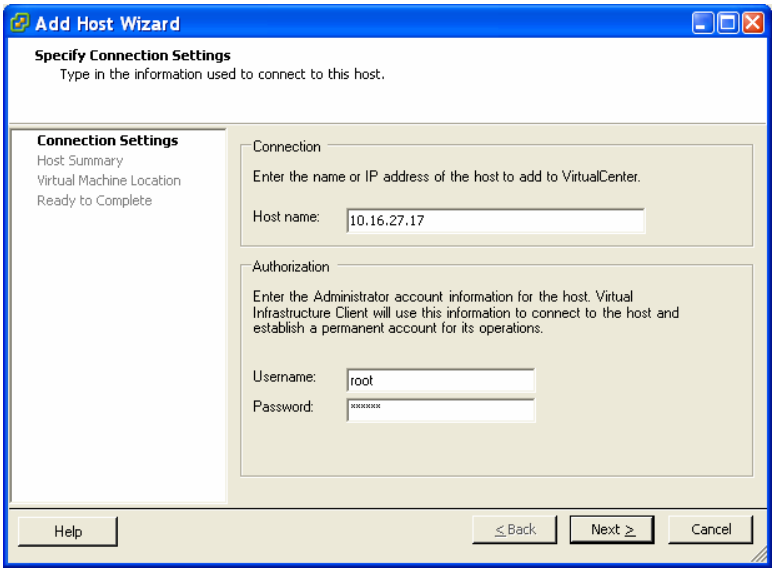
3.1 Adding ESX Server host to VirtualCenter

Go to VI client and login in to VirtualCenter.

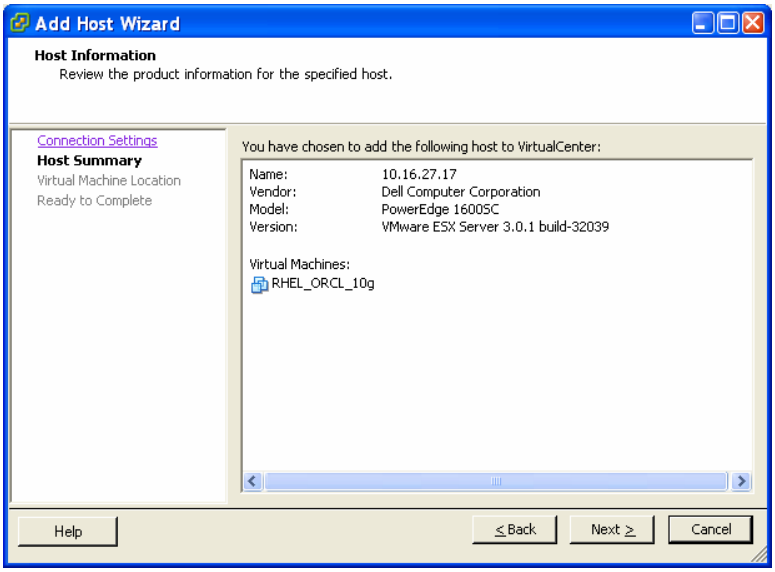


Right click on “hosts & clusters” and select “new data center” (we will call BEAVMDC).

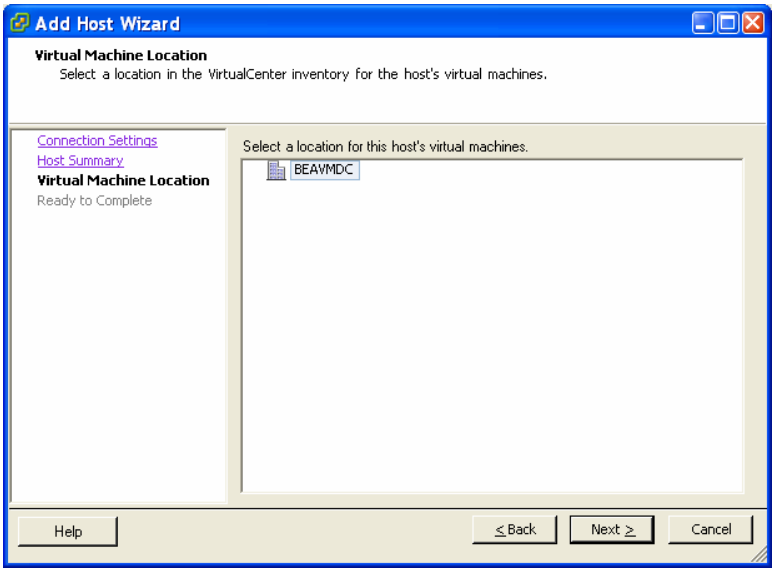
Right click on “BEAVMDC” and select “Add host”.


Add Host Wizard
Specify Connection Settings
Type in the information used to connect to this host.
Connection Settings
Host Summary
Virtual Machine Location
Ready to Complete
Connection
Enter the name or IP address of the host to add to VirtualCenter.
Host name:
10.16.27.17
Authorization
Enter the Administrator account information for the host. Virtual Infrastructure Client will use this information to connect to the host and establish a permanent account for its operations.
Username:
root
Password:
Help
< Back
Next >
Cancel

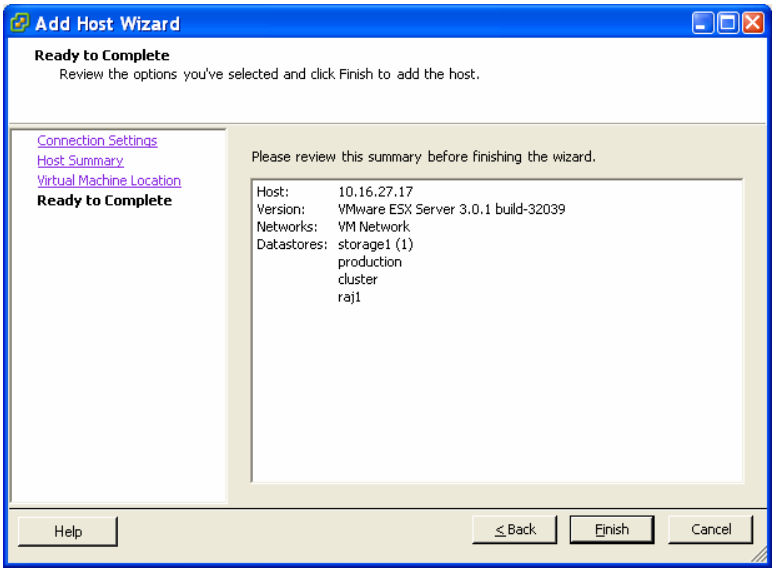
Enter the IP address of the ESX Server just setup and provide the administrator account (root) and password.



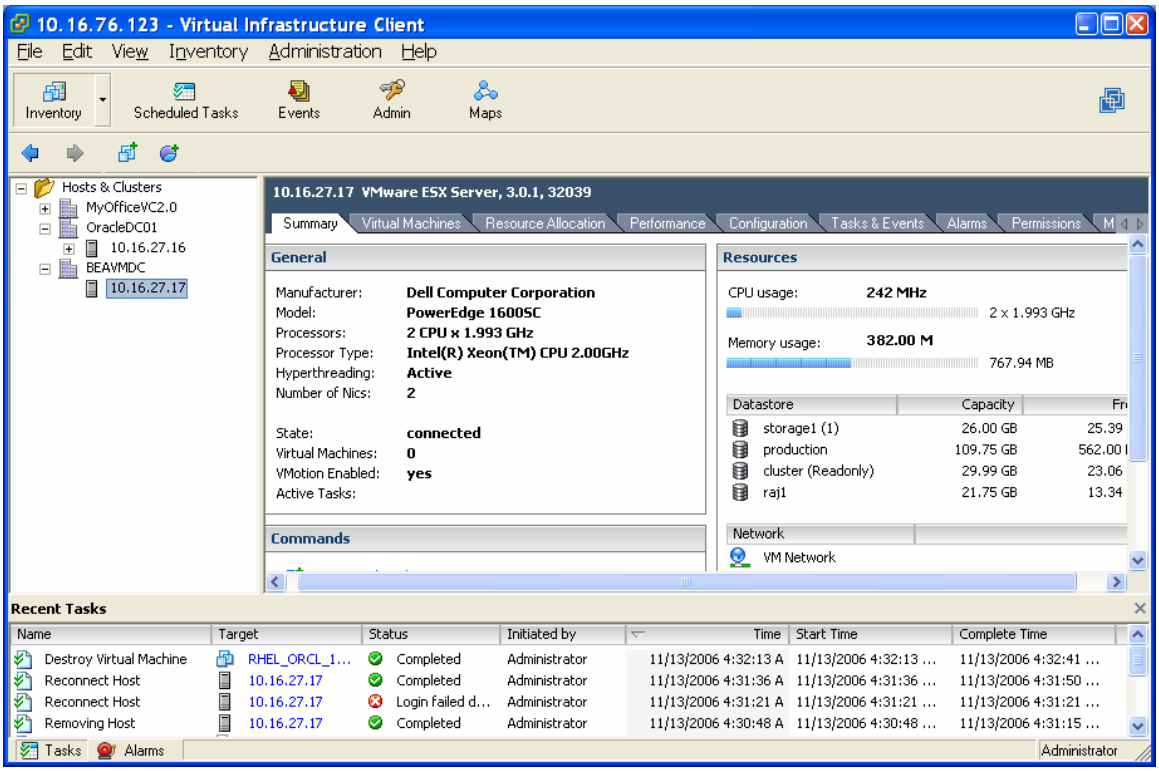
The host is identified (there is a VirtualCenter host agent that is installed along with ESX Server).



This location selection adds all the virtual machines from this host under BEAVMDC data center in the VirtualCenter inventory list and the default ESX Server host datastore “storage1”.



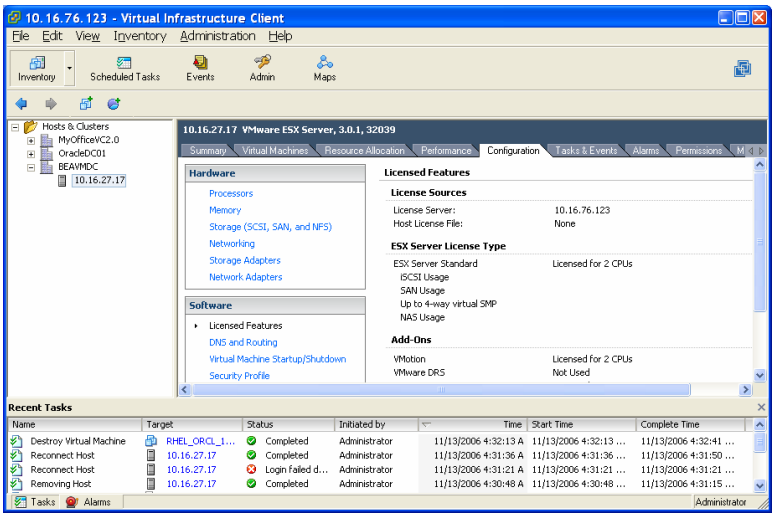
This will add the standalone ESX Server host to the VirtualCenter inventory list.


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Hosts & Clusters
MyOfficeVC2.0
OracleDC01
10.16.27.16
BEAVMDC
10.16.27.17
10.16.27.17 VMware ESX Server, 3.0.1, 32039
Summary Virtual Machines Resource Allocation Performance Configuration Tasks & Events Alarms Permissions
General
Manufacturer: Dell Computer Corporation
Model: PowerEdge 1600SC
Processors: 2 CPU x 1.993 GHz
Processor Type: Intel(R) Xeon(TM) CPU 2.00GHz
Hyperthreading: Active
Number of Nics: 2
State: connected
Virtual Machines: 0
VMotion Enabled: yes
Active Tasks:
Commands
Resources
CPU usage: 242 MHz
2 x 1.993 GHz
Memory usage: 382.00 M
767.94 MB
Datastore Capacity
storage1 (1) 26.00 GB 25.39
production 109.75 GB 562.00
cluster (Readonly) 29.99 GB 23.06
raj1 21.75 GB 13.34
Network
VM Network
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Destroy Virtual Machine RHEL_ORCL_1... Completed Administrator 11/13/2006 4:32:13 A 11/13/2006 4:32:13 ... 11/13/2006 4:32:41 ...
Reconnect Host 10.16.27.17 Completed Administrator 11/13/2006 4:31:36 A 11/13/2006 4:31:36 ... 11/13/2006 4:31:50 ...
Reconnect Host 10.16.27.17 Login failed d... Administrator 11/13/2006 4:31:21 A 11/13/2006 4:31:21 ... 11/13/2006 4:31:21 ...
Removing Host 10.16.27.17 Completed Administrator 11/13/2006 4:30:48 A 11/13/2006 4:30:48 ... 11/13/2006 4:31:15 ...
Tasks Alarms
Administrator

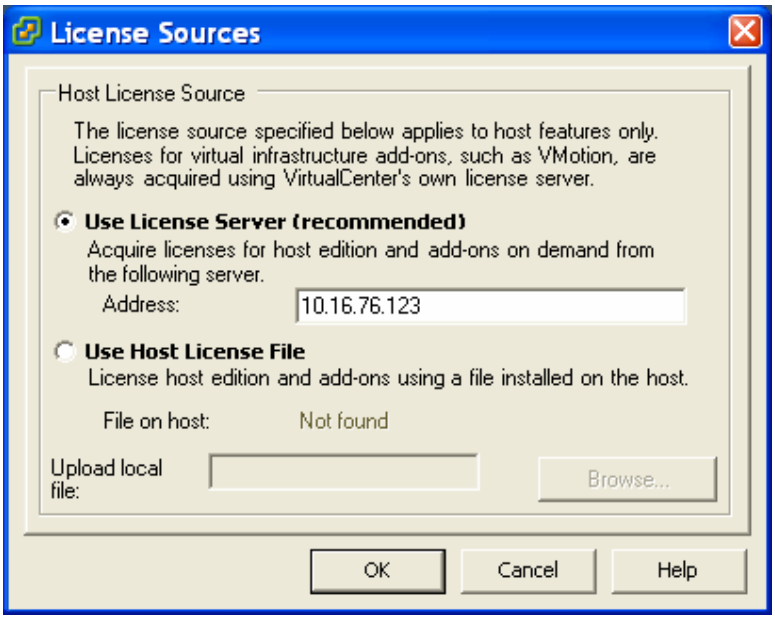
3.2 Configuring ESX Server Host to Use Server Based Licensing

Click on “configuration” tab after selecting <<ESX Server host>>

Click on “licensing features”

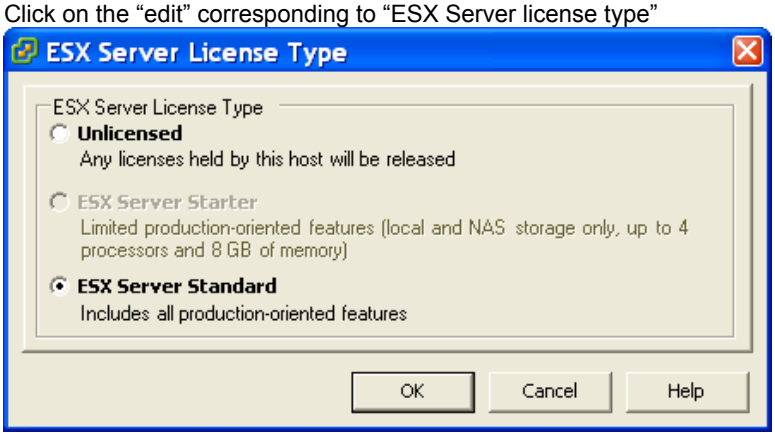


Click on the “Edit” button (on the right top corner) for License sources.


License Sources
Host License Source
The license source specified below applies to host features only. Licenses for virtual infrastructure add-ons, such as VMotion, are always acquired using VirtualCenter's own license server.
Use License Server (recommended)
Acquire licenses for host edition and add-ons on demand from the following server.
Address: 10.16.76.123
Use Host License File
License host edition and add-ons using a file installed on the host.
File on host: Not found
Upload local file:
Browse...
OK
Cancel
Help

Provide the license server hostname or IP.

Click on the “edit” corresponding to “ESX Server license type”


ESX Server License Type
ESX Server License Type
Unlicensed
Any licenses held by this host will be released
ESX Server Starter
Limited production-oriented features (local and NAS storage only, up to 4 processors and 8 GB of memory)
ESX Server Standard
Includes all production-oriented features
OK
Cancel
Help

Select “ESX Server Standard” (or the license type you are eligible for).

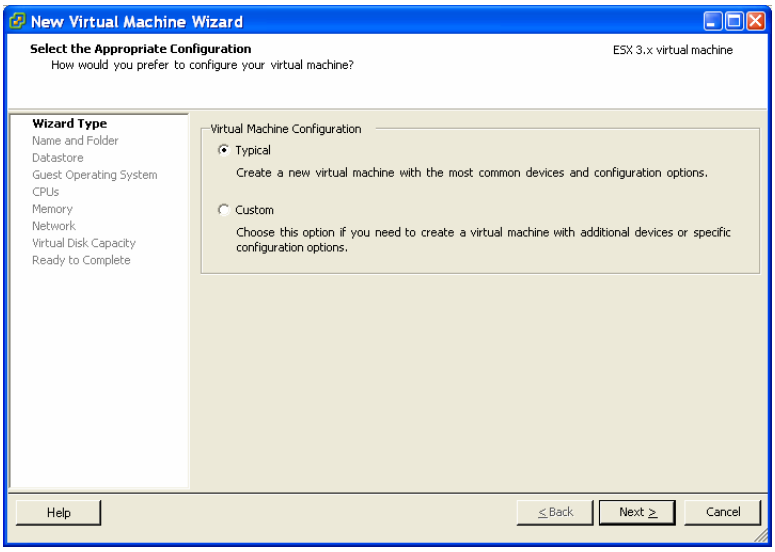
The window will now show all your license features for the host.

We are now ready to create the virtual machine for our BEA WLS Deployment.

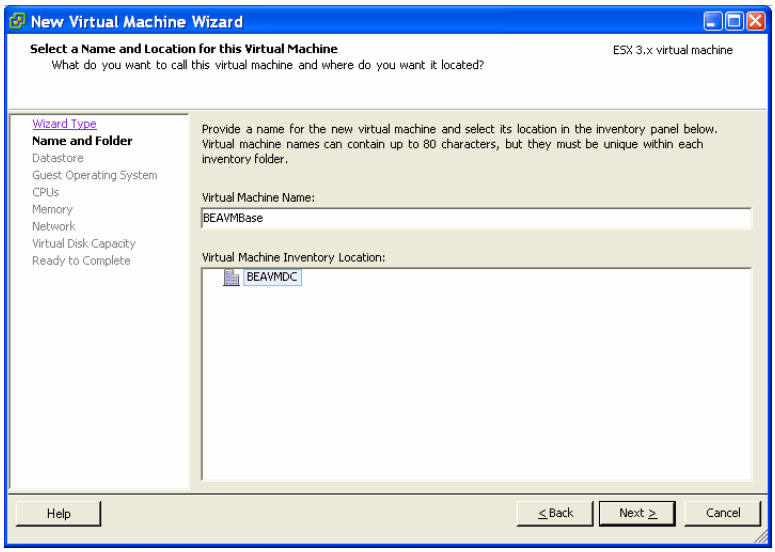
3.3 Creating a Virtual Machine

Login into VI Client and connect to VirtualCenter.

Right click on <<ESX host>> and click “new virtual machine”.



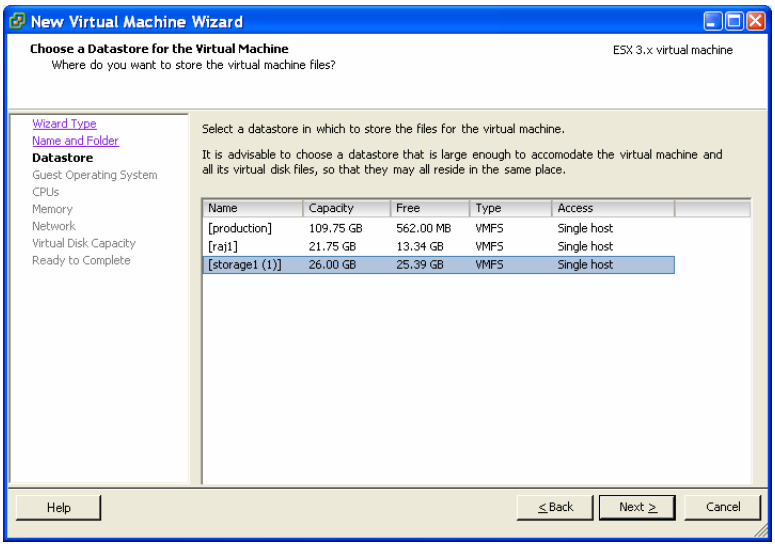
Create a typical virtual machine (VM) with the default device and configuration options.


New Virtual Machine Wizard
Select a Name and Location for this Virtual Machine
What do you want to call this virtual machine and where do you want it located?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Provide a name for the new virtual machine and select its location in the inventory panel below.
Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder.
Virtual Machine Name:
BEAVMBase
Virtual Machine Inventory Location:
BEAVMDC
Help
< Back
Next >
Cancel

The lab installation used the following:

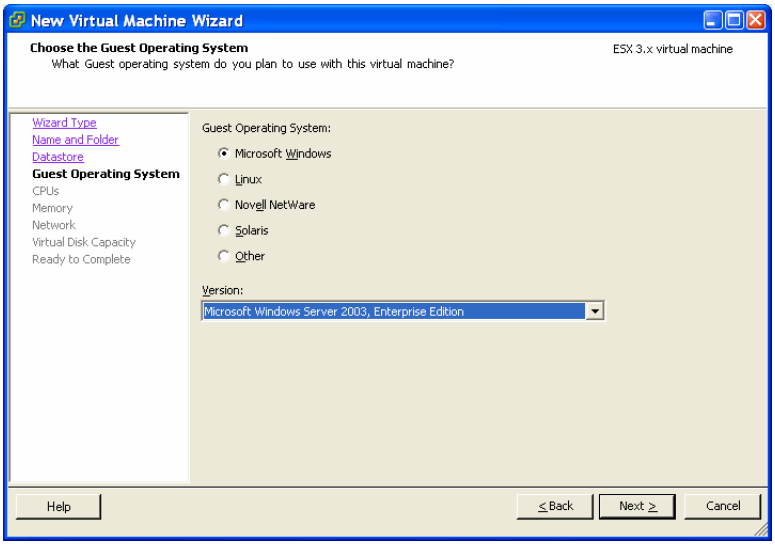
Name of the new VM = BEAVMBase

Inventory Location = BEAVMDC



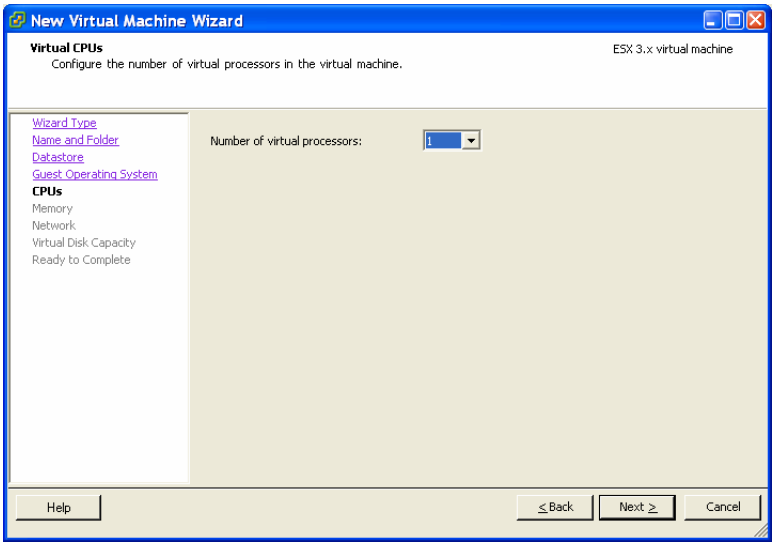
Make sure you have enough storage to support the VMs being created. Take the default datastore "storage1". You can create additional storage (local or SAN) later if needed.

Select the operating system you want to install. In our case, it is "MS Windows" and version is "2003 Enterprise Edition"



Select the number of (virtual) processors you want to use for this VM. We picked 1VCPU.

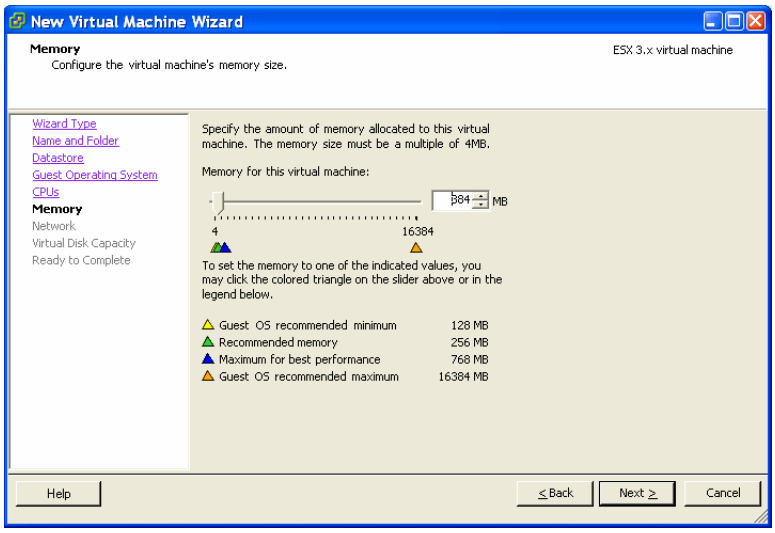
Note: The actual virtual CPUs you want to use depend on your architecture and sizing considerations.



Set your memory size appropriately depending on the OS and application requirements.

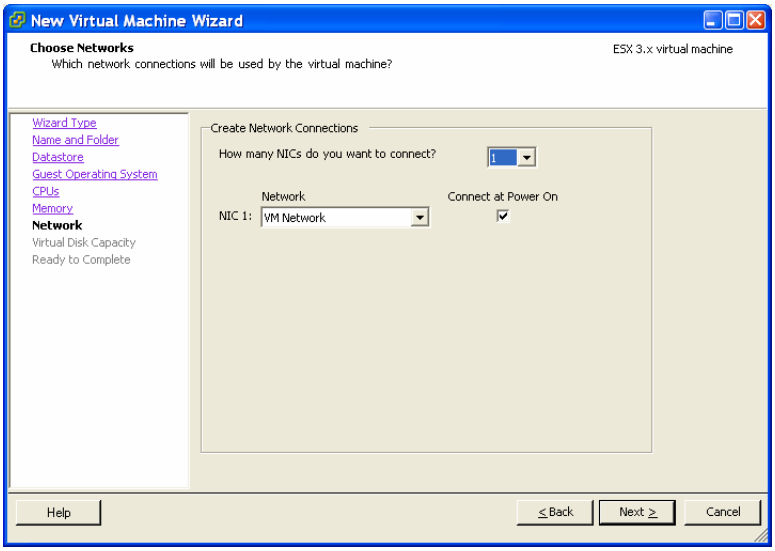
BEA recommendation is to have at least 1GB memory allocated to the BEA environment. Since we had a demo environment we picked 384MB and later increased it to 750MB.

Note: The memory settings can be changed later by editing the VM settings. You can pick the appropriate memory size for your VM based on your BEA WLS application sizing considerations.

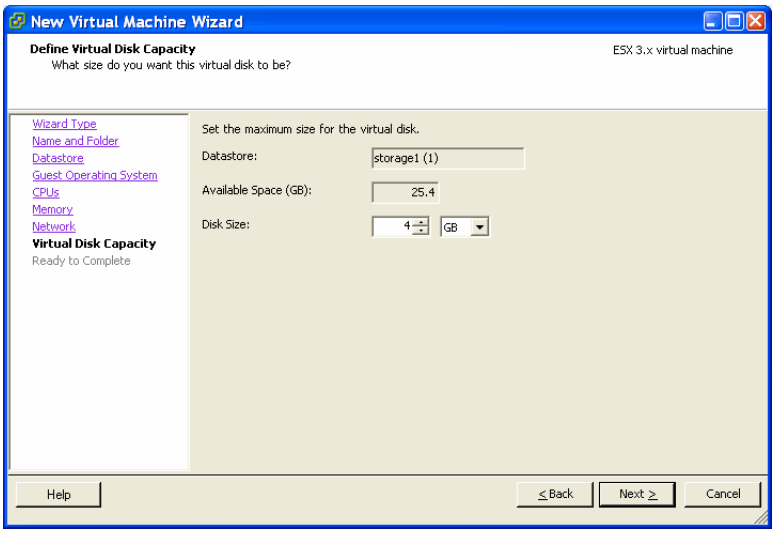

New Virtual Machine Wizard
Memory
Configure the virtual machine's memory size.
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4MB.
Memory for this virtual machine:
384
MB
4
16384
To set the memory to one of the indicated values, you may click the colored triangle on the slider above or in the legend below.
Guest OS recommended minimum 128 MB
Recommended memory 256 MB
Maximum for best performance 768 MB
Guest OS recommended maximum 16384 MB
Help
< Back
Next >
Cancel

Provide the number of NICs you want to use for this VM. We selected “1”.

You can configure additional NIC for use by VMs by using the configuration (Networking) options for the ESX Server host.



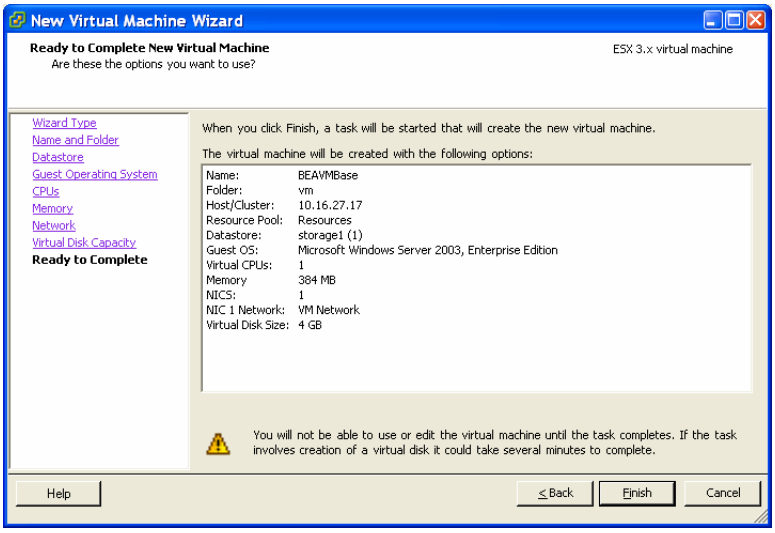
Provide size of virtual disk (storage) to host the VM. We picked 4GB for OS + Applications.



Enter the disk size in megabytes (MB) or gigabytes (GB). The default is 4GB. The available space on the selected VMFS volume is listed. You can configure a disk from as small as 1MB to as large as 2TB (2048GB).

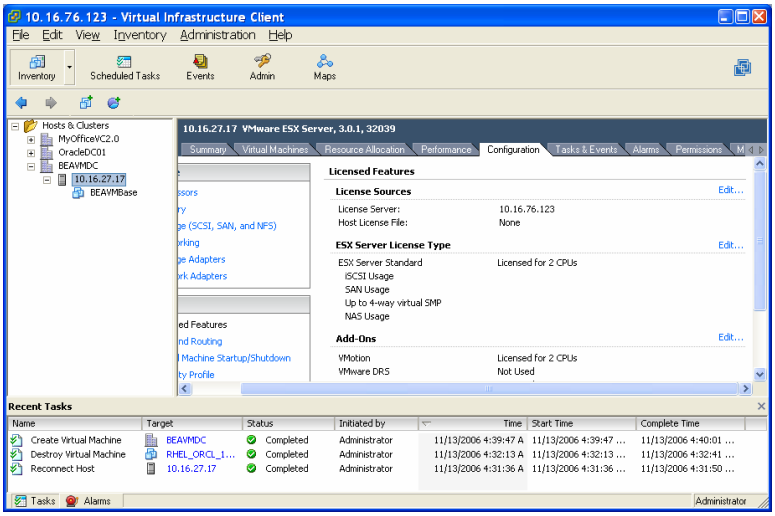
The virtual disk should be large enough to hold the guest operating system and all of the software that you intend to install with room for data and growth.

You cannot change the virtual disk's maximum capacity later, but you can install additional virtual disks later by using the Virtual Machine Properties dialog box.

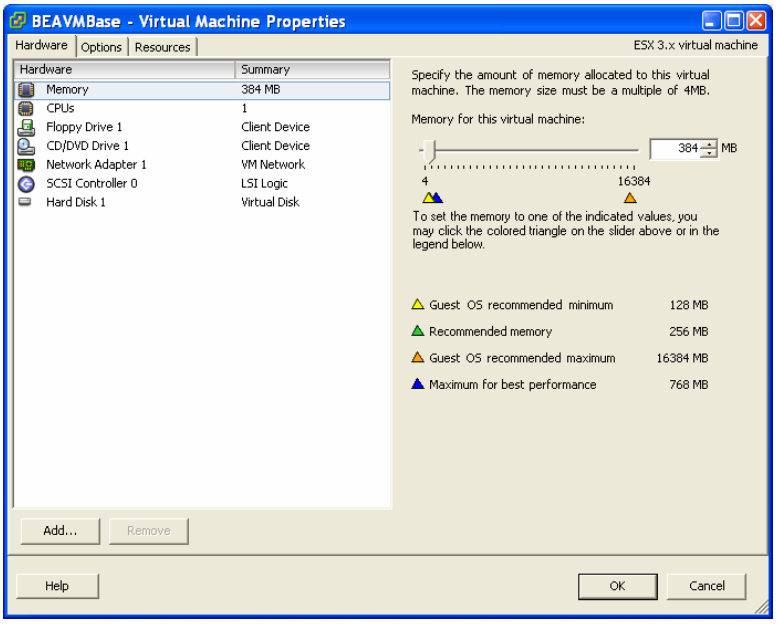

New Virtual Machine Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Name: BEAVMBase
Folder: vm
Host/Cluster: 10.16.27.17
Resource Pool: Resources
Datastore: storage1 (1)
Guest OS: Microsoft Windows Server 2003, Enterprise Edition
Virtual CPUs: 1
Memory 384 MB
NICS: 1
NIC 1 Network: VM Network
Virtual Disk Size: 4 GB
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Review the summary of parameters for the VM to be created.

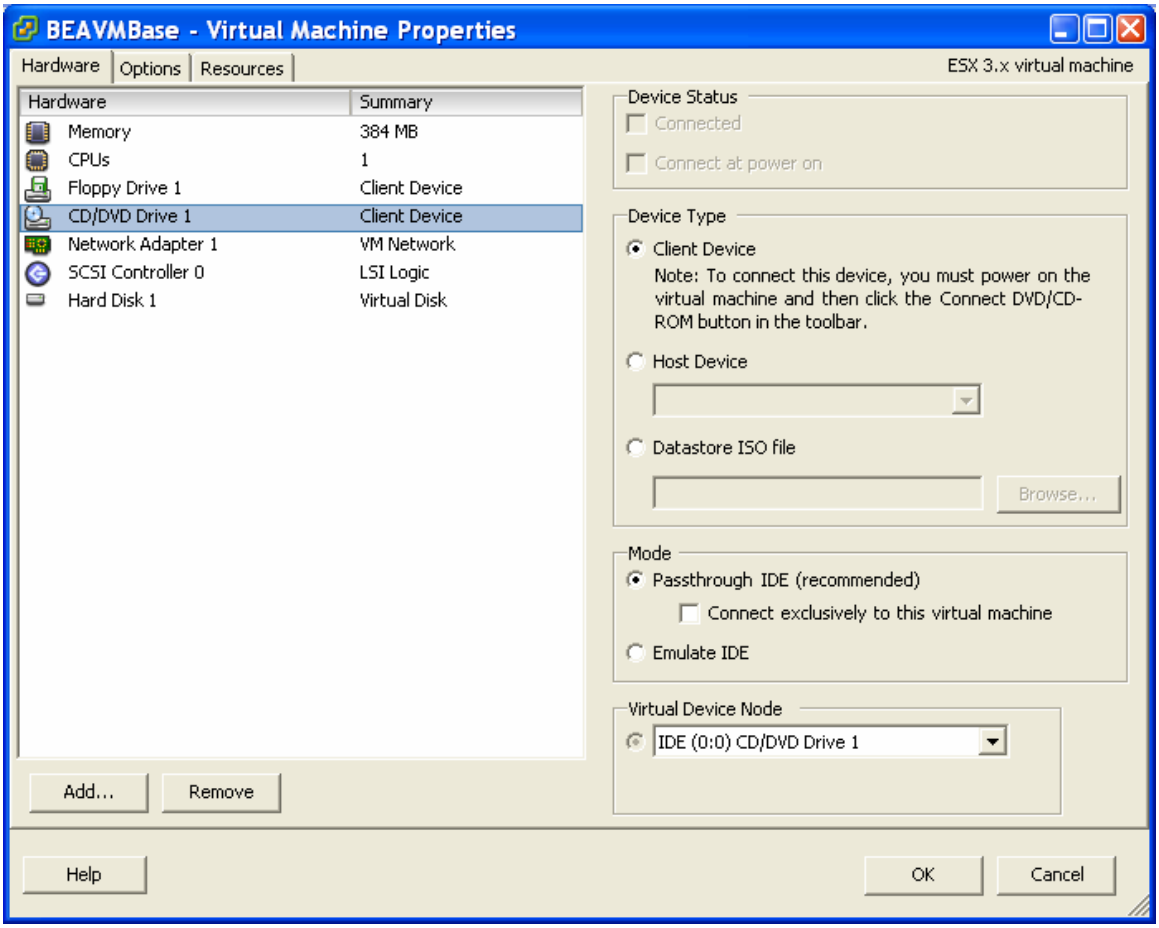
Click ‘Finish” to create the Virtual Machine.


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Hosts & Clusters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
10.16.27.17 VMware ESX Server, 3.0.1, 32039
Summary Virtual Machines Resource Allocation Performance Configuration Tasks & Events Alarms Permissions
Licensed Features
License Sources Edit...
License Server: 10.16.76.123
Host License File: None
ESX Server License Type Edit...
ESX Server Standard Licensed for 2 CPUs
iSCSI Usage
SAN Usage
Up to 4-way virtual SMP
NAS Usage
Add-Ons Edit...
VMotion Licensed for 2 CPUs
VMware DRS Not Used
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Create Virtual Machine BEAVMDC Completed Administrator 11/13/2006 4:39:47 A 11/13/2006 4:39:47 ... 11/13/2006 4:40:01 ...
Destroy Virtual Machine RHEL_ORCL_1... Completed Administrator 11/13/2006 4:32:13 A 11/13/2006 4:32:13 ... 11/13/2006 4:32:41 ...
Reconnect Host 10.16.27.17 Completed Administrator 11/13/2006 4:31:36 A 11/13/2006 4:31:36 ... 11/13/2006 4:31:50 ...
Tasks Alarms
Administrator

The “Recent Tasks” window will show the status. Wait till it shows completed.



Right click on BEAVMBase and “edit settings”.



Here you can edit, remove or add different components. Click on “CD/DVD Drive 1”. This usually shows client device as the default device. You can load the OS using client or host (ESX Server) device or using an existing .iso image in the VM datastores.

We used the VI client CD/DVD device as we installed the OS remotely. So select “client device”.

Now you are ready to insert the Windows OS CD in the host system drive and start the guest OS install.

Refer to Guest operating system install guide for specific OS requirements.

We used Windows 2003 server EE as the guest OS for our VM.

Now power on the VM to install the guest OS.

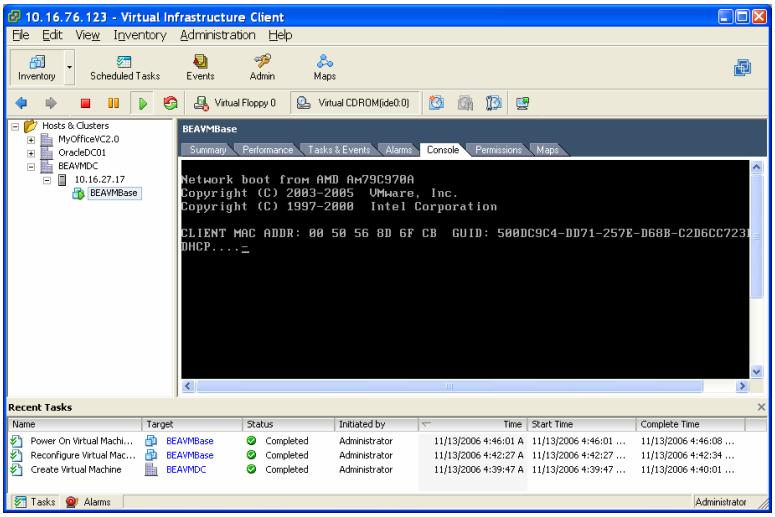
Make sure to click “connect DVD/CD-ROM” button in the tool bar on top.

3.4 Guest Operating System Installation

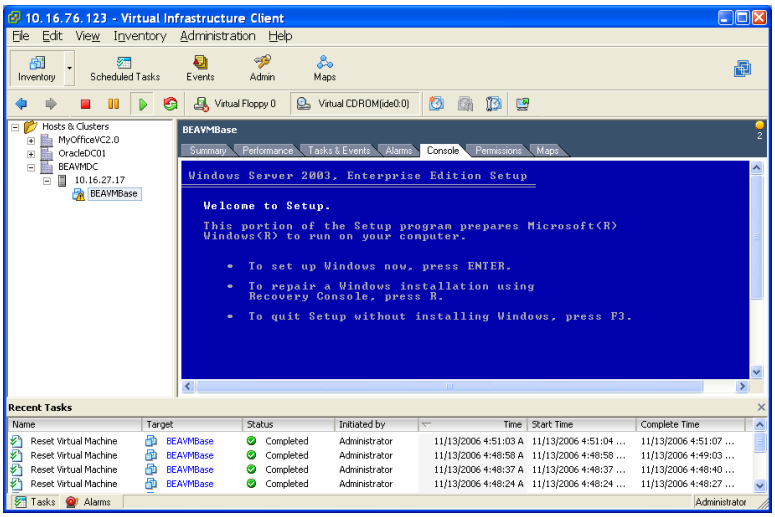
Insert OS CD on Client device (host running VI client).

Right click “BEAVMBase” and then select “power on”

Click on “console” on the right side tabs.

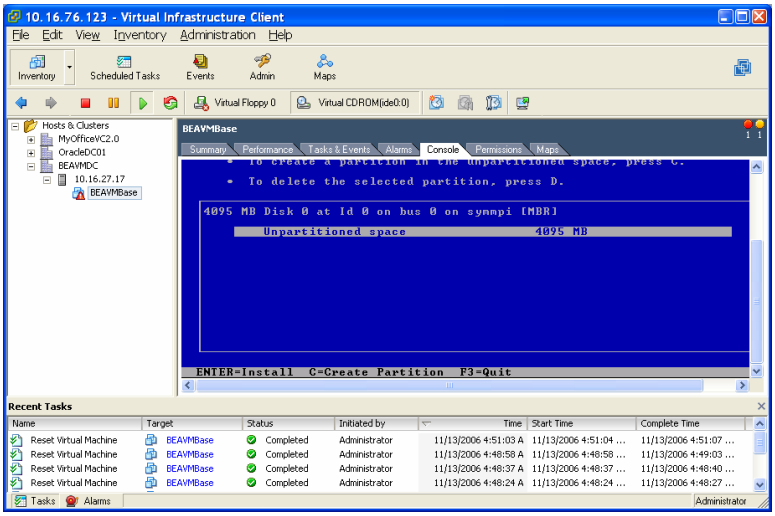


If the boot process in VM does not recognize your OS disk, check whether it has mounted successfully on the host ESX Server.

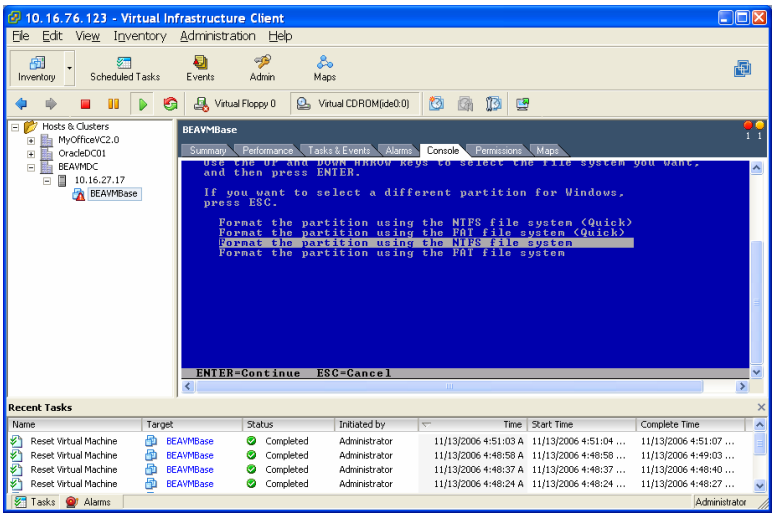

10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Hosts & Clusters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
Windows Server 2003, Enterprise Edition Setup
Welcome to Setup.
This portion of the Setup program prepares Microsoft(R) Windows(R) to run on your computer.
To set up Windows now, press ENTER.
To repair a Windows installation using Recovery Console, press R.
To quit Setup without installing Windows, press F3.
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:51:03 A 11/13/2006 4:51:04 ... 11/13/2006 4:51:07 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:58 A 11/13/2006 4:48:58 ... 11/13/2006 4:49:03 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:37 A 11/13/2006 4:48:37 ... 11/13/2006 4:48:40 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:24 A 11/13/2006 4:48:24 ... 11/13/2006 4:48:27 ...
Tasks Alarms
Administrator

Proceed through the regular OS setup (follow standard installation procedure for windows server 2003 EE SP1).

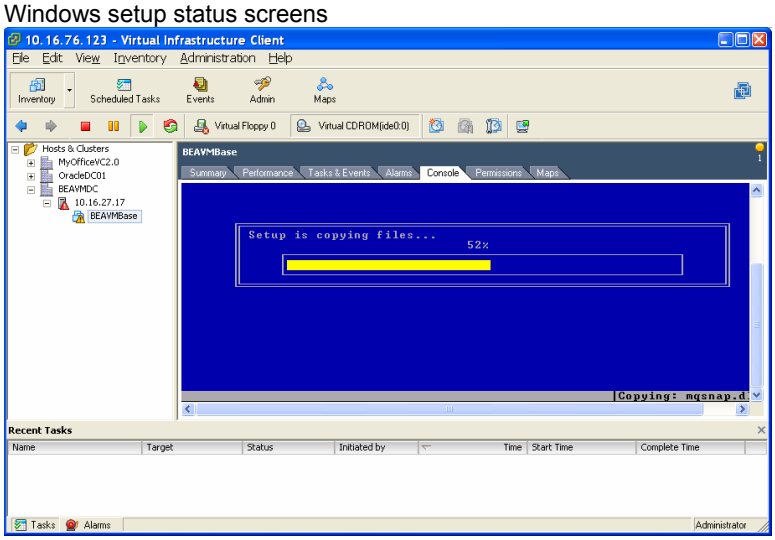
Note that disk size presented to you is the same as what you had provided as the disk size during “new VM” setup.


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Hosts & Clusters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
To delete the selected partition, press D.
4095 MB Disk 0 at Id 0 on bus 0 on symmpi [MBR]
Unpartitioned space 4095 MB
ENTER=Install C=Create Partition F3=Quit
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:51:03 A 11/13/2006 4:51:04 ... 11/13/2006 4:51:07 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:58 A 11/13/2006 4:48:58 ... 11/13/2006 4:49:03 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:37 A 11/13/2006 4:48:37 ... 11/13/2006 4:48:40 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:24 A 11/13/2006 4:48:24 ... 11/13/2006 4:48:27 ...
Tasks Alarms
Administrator

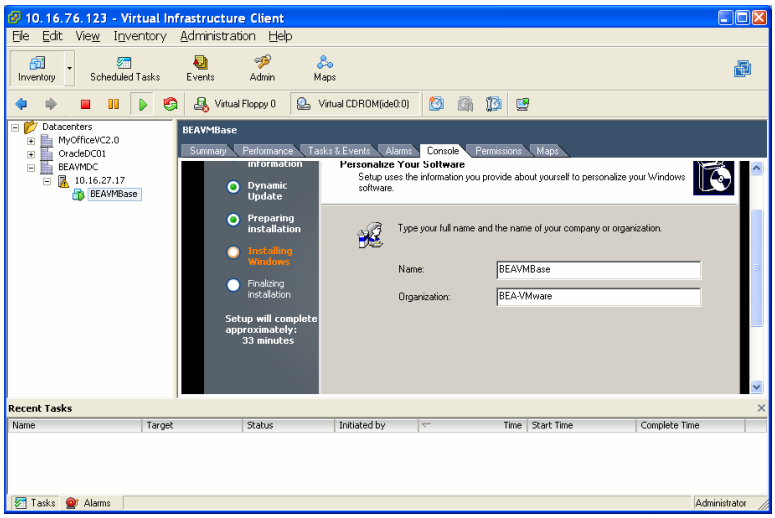
Format using NTFS file system.

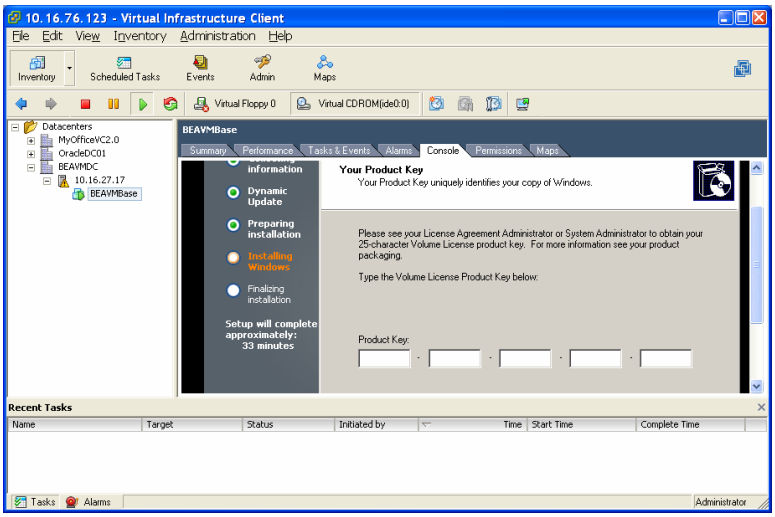

10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Hosts & Clusters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
and then press ENTER.
If you want to select a different partition for Windows,
press ESC.
Format the partition using the NTFS file system (Quick)
Format the partition using the FAT file system (Quick)
Format the partition using the NTFS file system
Format the partition using the FAT file system
ENTER=Continue ESC=Cancel
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:51:03 A 11/13/2006 4:51:04 ... 11/13/2006 4:51:07 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:58 A 11/13/2006 4:48:58 ... 11/13/2006 4:49:03 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:37 A 11/13/2006 4:48:37 ... 11/13/2006 4:48:40 ...
Reset Virtual Machine BEAVMBase Completed Administrator 11/13/2006 4:48:24 A 11/13/2006 4:48:24 ... 11/13/2006 4:48:27 ...
Tasks Alarms
Administrator

Windows setup status screens



After the installation, system boots up and comes up as follows




10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
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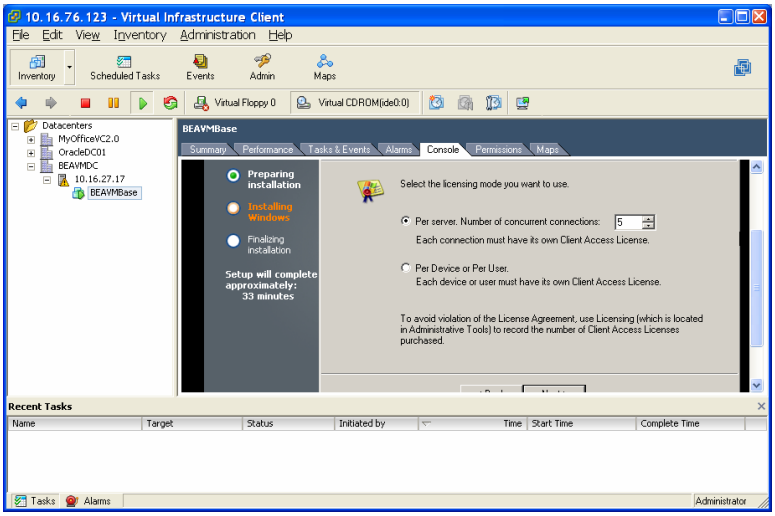
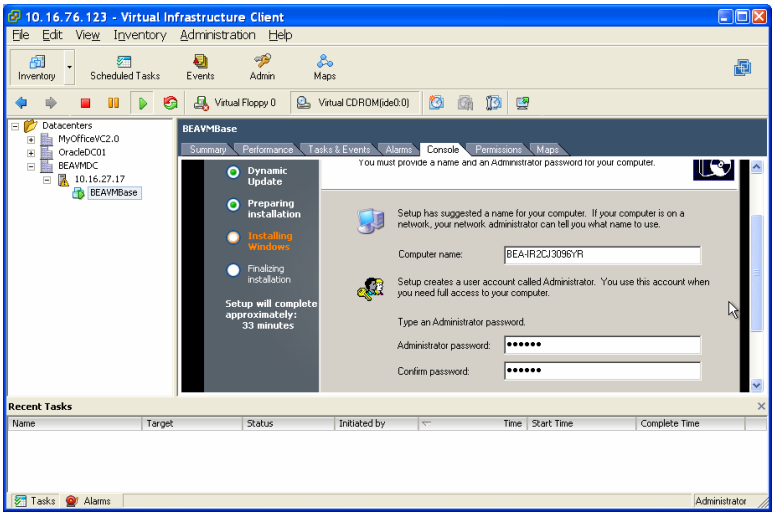
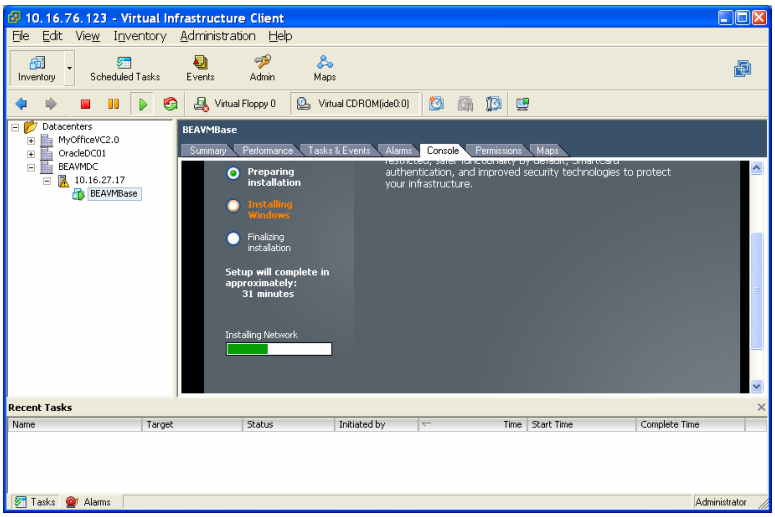
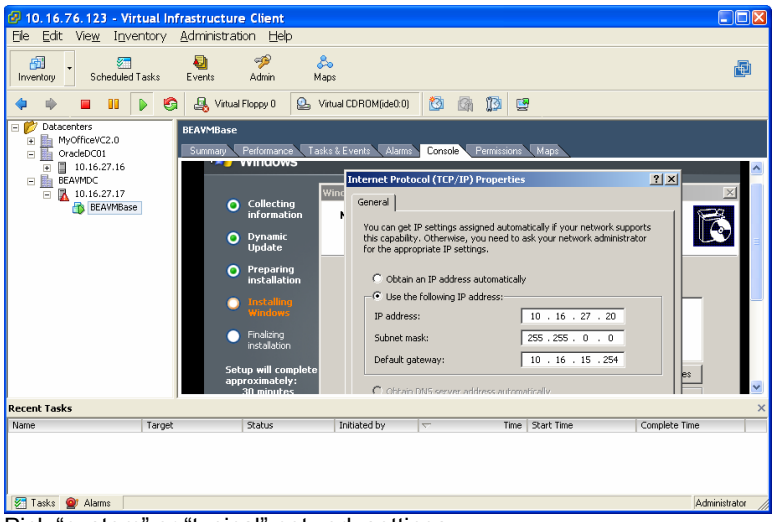
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Datacenters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
information
Dynamic Update
Preparing installation
Installing Windows
Finalizing installation
Setup will complete approximately: 33 minutes
Your Product Key
Your Product Key uniquely identifies your copy of Windows.
Please see your License Agreement Administrator or System Administrator to obtain your 25-character Volume License product key. For more information see your product packaging.
Type the Volume License Product Key below:
Product Key:
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Tasks Alarms
Administrator


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Datacenters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
Preparing installation
Installing Windows
Finalizing installation
Setup will complete approximately: 33 minutes
Select the licensing mode you want to use.
Per server. Number of concurrent connections: 5
Each connection must have its own Client Access License.
Per Device or Per User.
Each device or user must have its own Client Access License.
To avoid violation of the License Agreement, use Licensing (which is located in Administrative Tools) to record the number of Client Access Licenses purchased.
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Tasks Alarms
Administrator

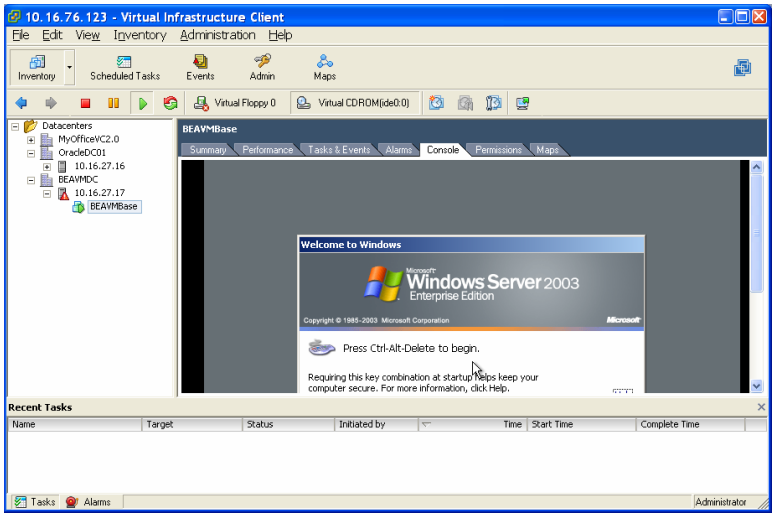

10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Datacenters
MyOfficeVC2.0
OracleDC01
BEAVMDC
10.16.27.17
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
Dynamic Update
Preparing installation
Installing Windows
Finalizing installation
Setup will complete approximately: 33 minutes
You must provide a name and an Administrator password for your computer.
Setup has suggested a name for your computer. If your computer is on a network, your network administrator can tell you what name to use.
Computer name:
BEA-IR2CJ3096YR
Setup creates a user account called Administrator. You use this account when you need full access to your computer.
Type an Administrator password.
Administrator password:
Confirm password:
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Tasks Alarms
Administrator





Pick “custom” or “typical” network settings.

We picked “custom”.
If you want to provide static IP information, please choose custom settings.



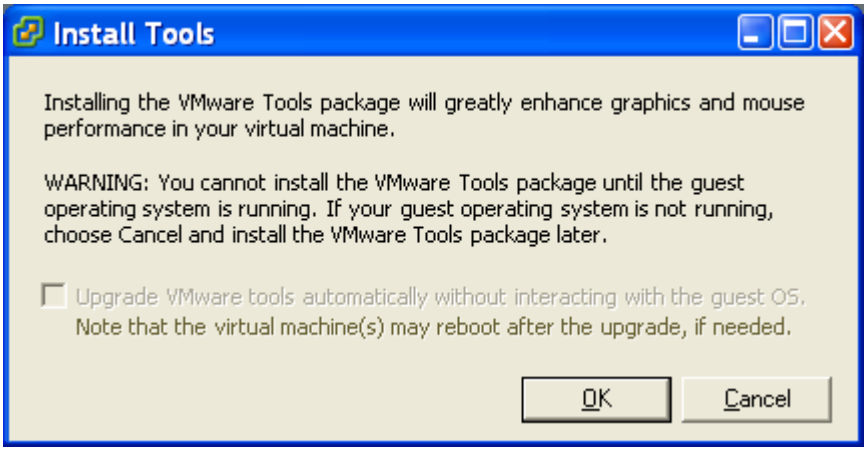
Right click on BEAVMBase and select “send Ctrl+Alt+Del”. If you do this manually even though your cursor might point to the VM console window, the VI client system will also execute a “Ctrl+Alt+Del”.

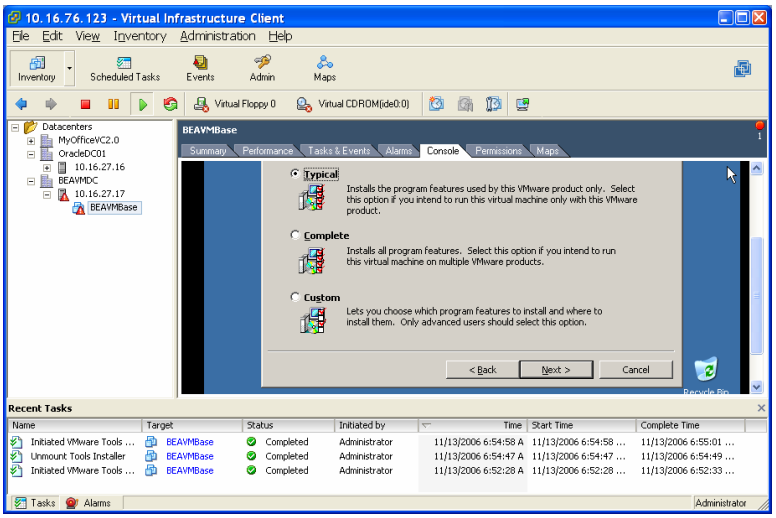
Your display and mouse movement would be a little painful because VMware tools have not been installed. You can use “Cltrl+Alt” to move in and out of the console window of VM and external host (VI client) windows. Once VMware tools are installed, the VM console display and mouse will work fine.

Once logged in, you are ready to install “VM Tools”.

Note: It is important to install VM Tools immediately after the Guest OS installation and before you start other activities including application setup, template or migration.

Right click on “BEAVMBase” virtual machine and select “Install VMware Tools”.


Install Tools
Installing the VMware Tools package will greatly enhance graphics and mouse performance in your virtual machine.
WARNING: You cannot install the VMware Tools package until the guest operating system is running. If your guest operating system is not running, choose Cancel and install the VMware Tools package later.
Upgrade VMware tools automatically without interacting with the guest OS.
Note that the virtual machine(s) may reboot after the upgrade, if needed.
OK
Cancel



Select “typical” install and let the installation complete successfully.
Set the display settings when prompted and once the install is completed, reboot the system.

Navigation should be much easier when the system comes up.

The Lab VM network Information:
IP: 10.16.27.18 Subnet: 255.255.0.0 Gateway: 10.16.15.254 DNS: 10.16.15.150

You can remote login (display) into the windows system, perform administration and new application installation tasks. Make sure to enable “remote desktop” option on the system (remote tab) menu.

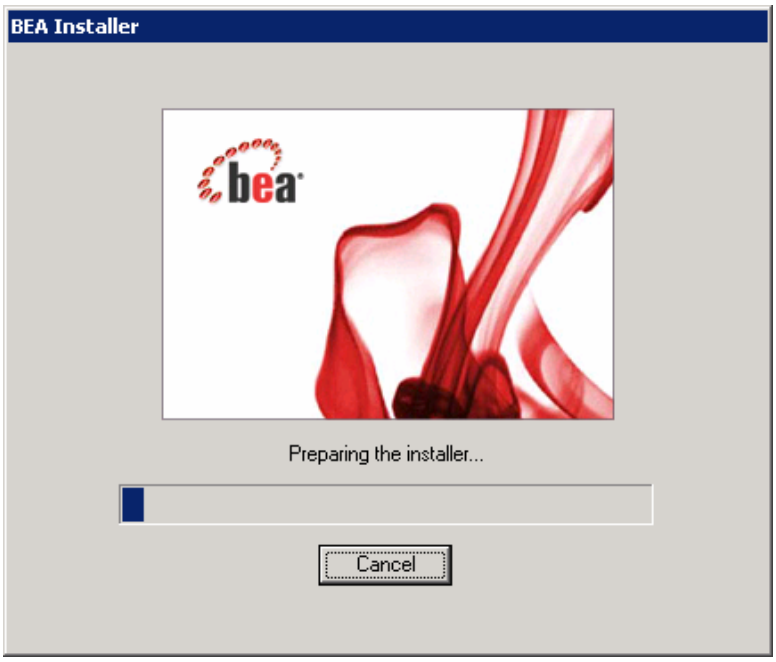
4.0 BEA WebLogic Software Installation on Virtual Machines

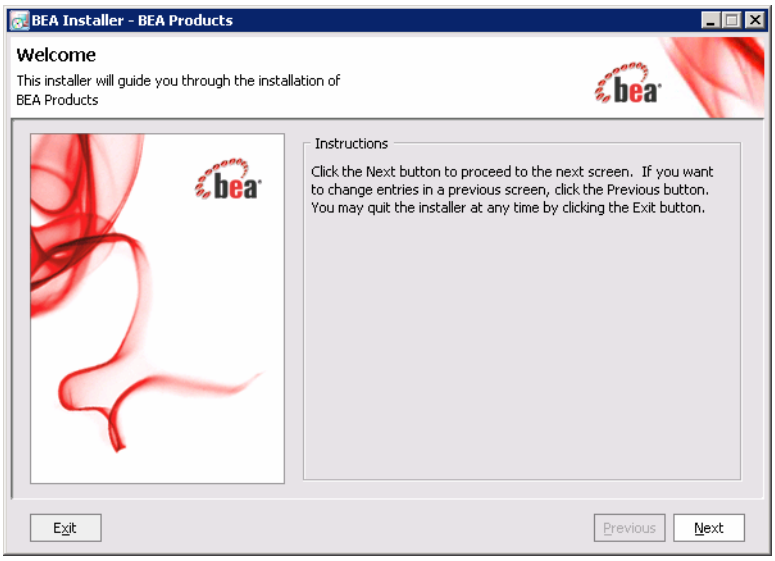
Now that a basic Virtual Machine has been built with Windows Server 2003 EE SP1 operating system environment, we will be installing the BEA WebLogic Application Server (BEA WLS) as part of the base image.

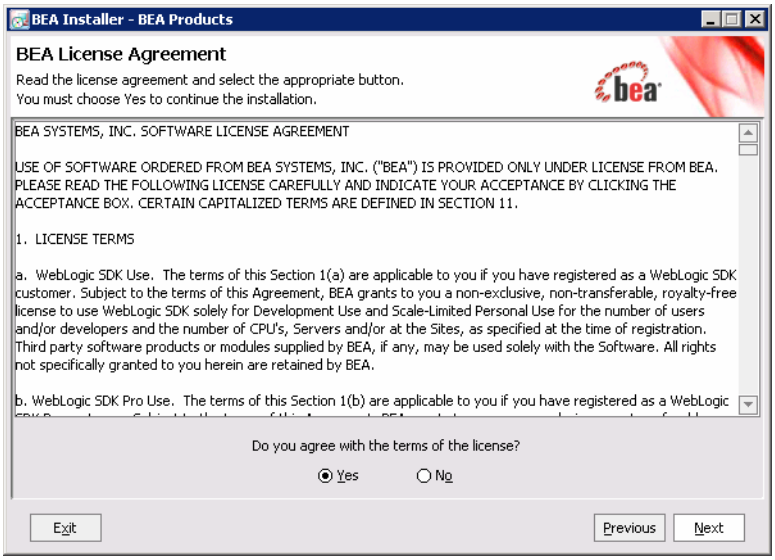
Optional: Any other custom application (including OS patches, security, anti-virus, system tools etc.) that should be deployed across the BEA application environment.

4.1 Installation of BEA WebLogic 9.2

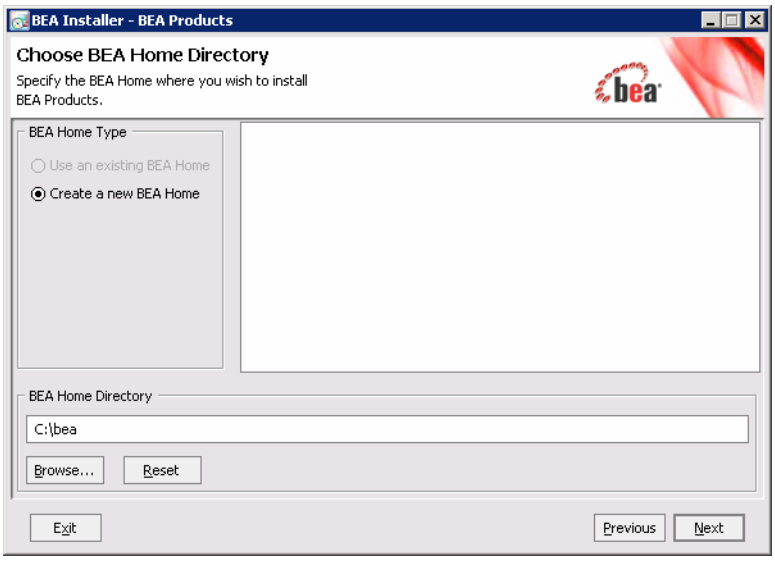
Install from your CD or downloaded files (expanded) onto the windows virtual machine just created (BEAVMBase).



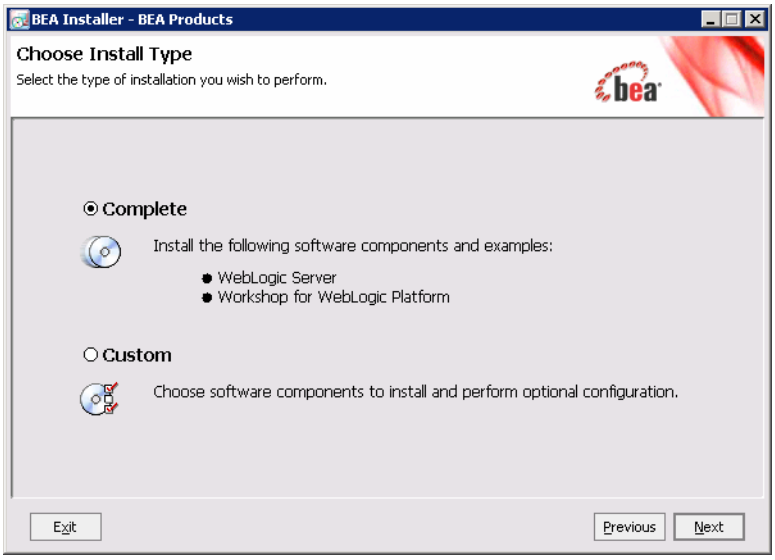

BEA Installer - BEA Products
Welcome
This installer will guide you through the installation of BEA Products
Instructions
Click the Next button to proceed to the next screen. If you want to change entries in a previous screen, click the Previous button. You may quit the installer at any time by clicking the Exit button.
Exit
Previous
Next


BEA Installer - BEA Products
BEA License Agreement
Read the license agreement and select the appropriate button.
You must choose Yes to continue the installation.
BEA SYSTEMS, INC. SOFTWARE LICENSE AGREEMENT
USE OF SOFTWARE ORDERED FROM BEA SYSTEMS, INC. ("BEA") IS PROVIDED ONLY UNDER LICENSE FROM BEA. PLEASE READ THE FOLLOWING LICENSE CAREFULLY AND INDICATE YOUR ACCEPTANCE BY CLICKING THE ACCEPTANCE BOX. CERTAIN CAPITALIZED TERMS ARE DEFINED IN SECTION 11.
1. LICENSE TERMS
a. WebLogic SDK Use. The terms of this Section 1(a) are applicable to you if you have registered as a WebLogic SDK customer. Subject to the terms of this Agreement, BEA grants to you a non-exclusive, non-transferable, royalty-free license to use WebLogic SDK solely for Development Use and Scale-Limited Personal Use for the number of users and/or developers and the number of CPU's, Servers and/or at the Sites, as specified at the time of registration. Third party software products or modules supplied by BEA, if any, may be used solely with the Software. All rights not specifically granted to you herein are retained by BEA.
b. WebLogic SDK Pro Use. The terms of this Section 1(b) are applicable to you if you have registered as a WebLogic
Do you agree with the terms of the license?
Yes
No
Exit
Previous
Next

Accept License Agreement.



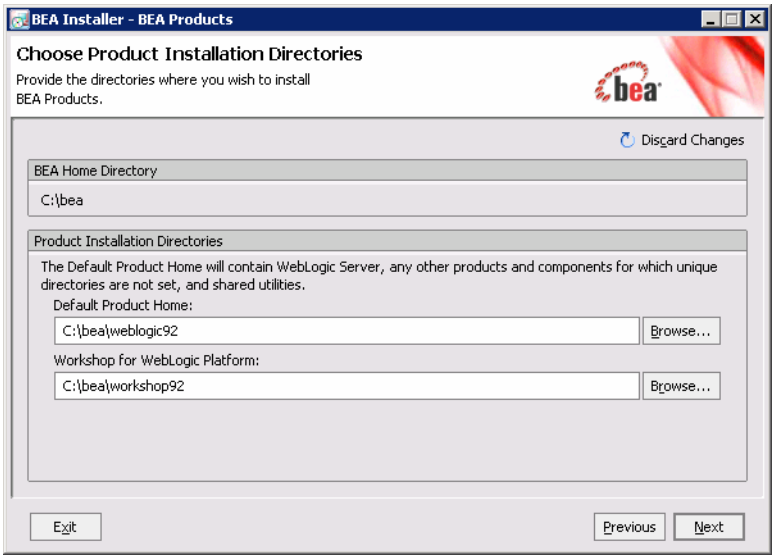
Provide the path name to BEA Home directory.



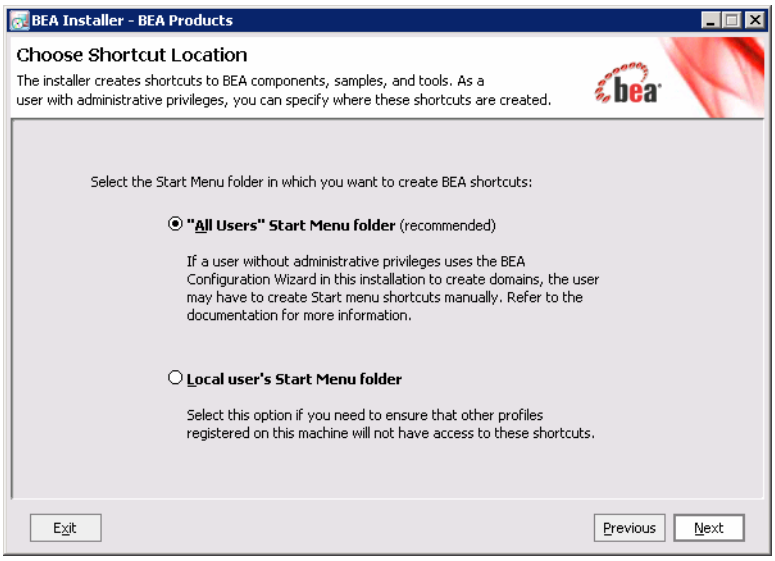
Select “Complete” as Installation type.

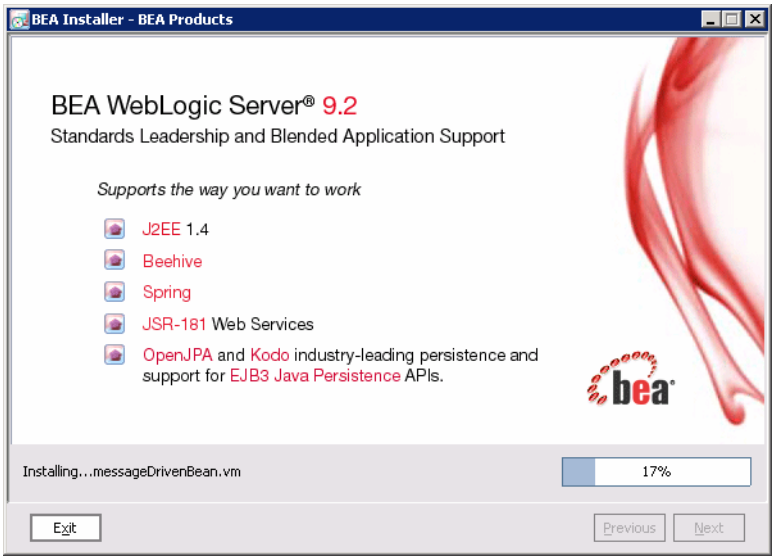
BEA Installer - BEA Products
Optional Tools
Please select which of the following optional tools you want to install.
Mercury profiling tools (development environment only)
Exit
Previous
Next

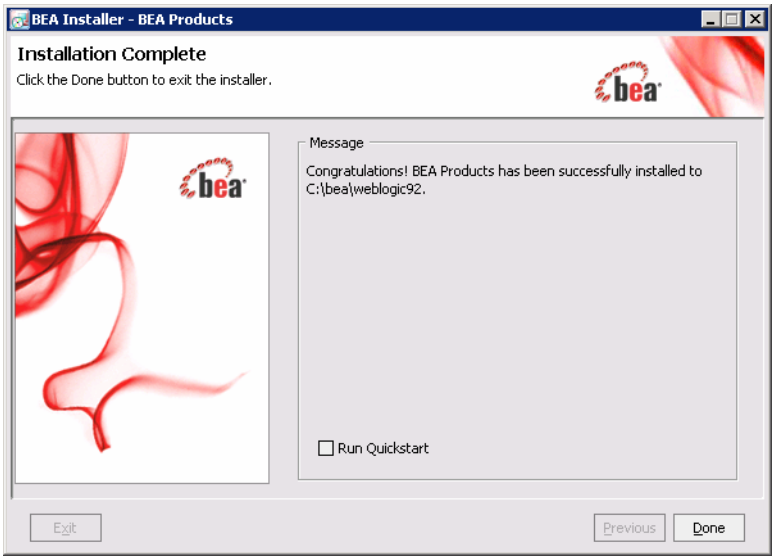
Unselect “Mercury Tools” unless you are deploying for a development environment.



Select the product installation directory. Every version of the BEA product will use its own directory under “BEA HOME”.


BEA Installer - BEA Products
Choose Shortcut Location
The installer creates shortcuts to BEA components, samples, and tools. As a user with administrative privileges, you can specify where these shortcuts are created.
Select the Start Menu folder in which you want to create BEA shortcuts:
"All Users" Start Menu folder (recommended)
If a user without administrative privileges uses the BEA Configuration Wizard in this installation to create domains, the user may have to create Start menu shortcuts manually. Refer to the documentation for more information.
Local user's Start Menu folder
Select this option if you need to ensure that other profiles registered on this machine will not have access to these shortcuts.
Exit
Previous
Next


BEA Installer - BEA Products
BEA WebLogic Server® 9.2
Standards Leadership and Blended Application Support
Supports the way you want to work
J2EE 1.4
Beehive
Spring
JSR-181 Web Services
OpenJPA and Kodo industry-leading persistence and support for EJB3 Java Persistence APIs.
Installing...messageDrivenBean.vm
17%
Exit
Previous
Next


BEA Installer - BEA Products
Installation Complete
Click the Done button to exit the installer.
Message
Congratulations! BEA Products has been successfully installed to C:\bea\weblogic92.
Run Quickstart
Exit
Previous
Done

This will complete install of the base image. You can also install all other relevant software that is needed as part of a BEA standard distribution in your environment.

4.2 Installation of Node Manager as Windows Service

We also installed the Weblogic Node Manager as a Windows service. This will ensure that the node manager is configured across the WLS environment and starts up during system(VM) startup so that the WLS managed server nodes can be managed from the WebLogic admin server.

Go to “My Computer” → C:\bea\weblogic92\server\bin assuming your installation directory for BEA products is at C: drive on your system.

Execute (double click) InstallNodeMgrSvc.cmd to install the Node Manager as a Windows service.

This completes the installation of the BEA WebLogic Server virtual machine base image.

5.0 Deployment of BEA WebLogic Server Virtual Machines

This section discusses how the BEA virtual machine base image can be used for deployment in Development, Test or Production environments.

We have created a base image consisting of the OS and BEA WLS environment. We will now create a template out of this virtual machine image. This template will then be used to generate (by cloning) additional BEA WLS nodes which are customized with unique IP, SID, hostname and WLS instances. This process of generating pre-built templates (or library of template images) and using them to clone multiple WLS nodes provides for rapid deployment in any BEA environment.

5.1 Templates

A template is a golden image of a virtual machine that can be used as a master copy to create and provision new virtual machines. This image typically includes a specified operating system and configuration that provides virtual counterparts to hardware components. Typically, a template includes an installed guest operating system and a set of applications. You can install all standard components into a VM, convert it into a template and use that image for rapid deployment across your virtual infrastructure.

Templates coexist with virtual machines at any level within the template and virtual machine domain. You can order collections of virtual machines and templates into arbitrary folders and apply a variety of permissions to both virtual machines and templates. Virtual machines can be transformed into templates without requiring a full copy of the virtual machine files and the creation of a new object.

You can use templates to create new virtual machines by cloning the template as a virtual machine. When completed, the deployed virtual machine is added to the inventory panel datacenter where the host resides. Templates are created from existing virtual machines. After a template is created, it can be deployed only to managed hosts that have access to the datastore where the template resides. On ESX Server hosts, the datastores are the VMFS, local, or NAS volumes that you configured for your ESX Server.

If a managed host with templates stored in it is removed from VMware VirtualCenter, all the templates are also removed from the inventory. Returning the managed host to VirtualCenter does not re-register the templates because they are invisible to the host. When a host is added back to VirtualCenter, you can register the templates, making them visible again.

5.2 Creating Templates

The BEAVMBase virtual machine created in the previous sections is the base image for our BEA WLS deployments and is now ready to be cloned to a template.

Use the following steps to create a template out of the BEAVMBase virtual machine.

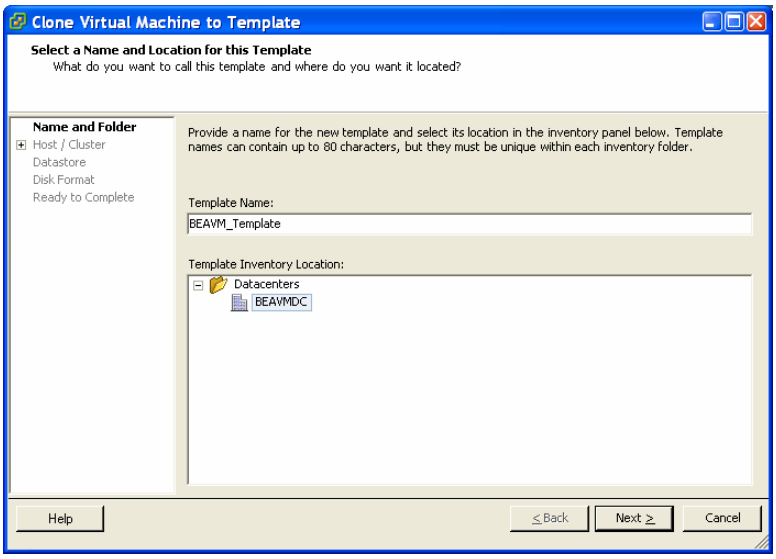
Shutdown the BEAVMBase virtual machine.

From VirtualCenter, right click on BEAVMBase, select “shutdown guest OS”.

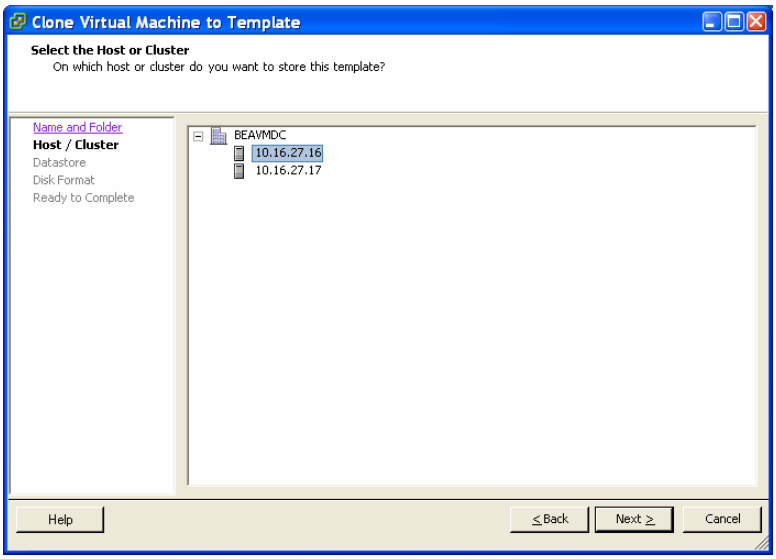
Right click on “BEAVMBase” and select “clone to template”

(You can select “clone to template” or “convert to template”).

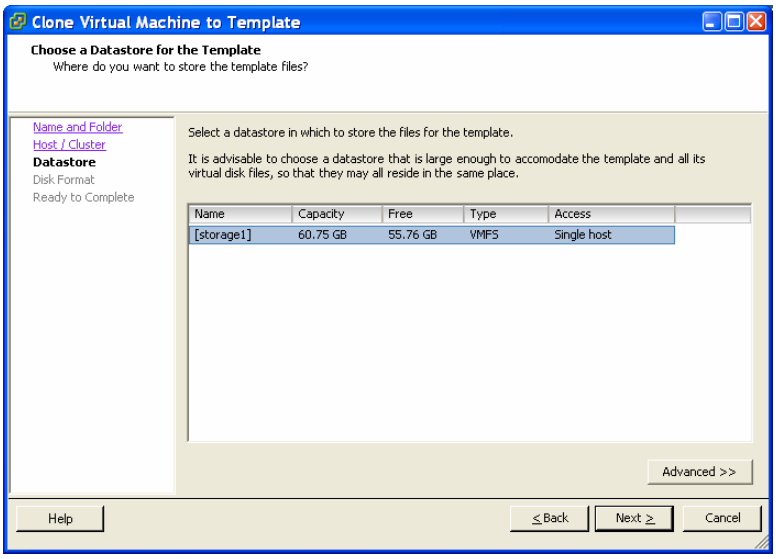
Clone to template → would keep the current VM intact and create a new VM template.


Clone Virtual Machine to Template
Select a Name and Location for this Template
What do you want to call this template and where do you want it located?
Name and Folder
Host / Cluster
Datastore
Disk Format
Ready to Complete
Provide a name for the new template and select its location in the inventory panel below. Template names can contain up to 80 characters, but they must be unique within each inventory folder.
Template Name:
BEAVM_Template
Template Inventory Location:
Datacenters
BEAVMDC
Help
< Back
Next >
Cancel

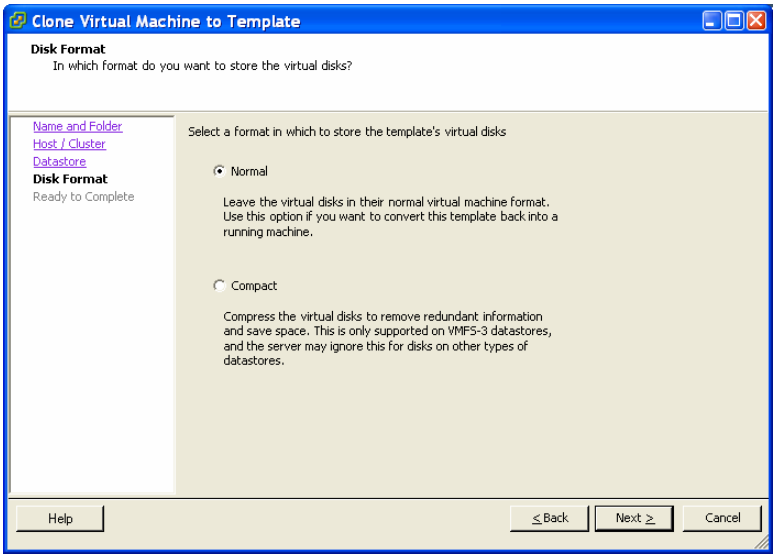
Provide the name of the template (BEAVM_Template) and also select the data center location where you want it to be stored (in this case: BEAVMDC)



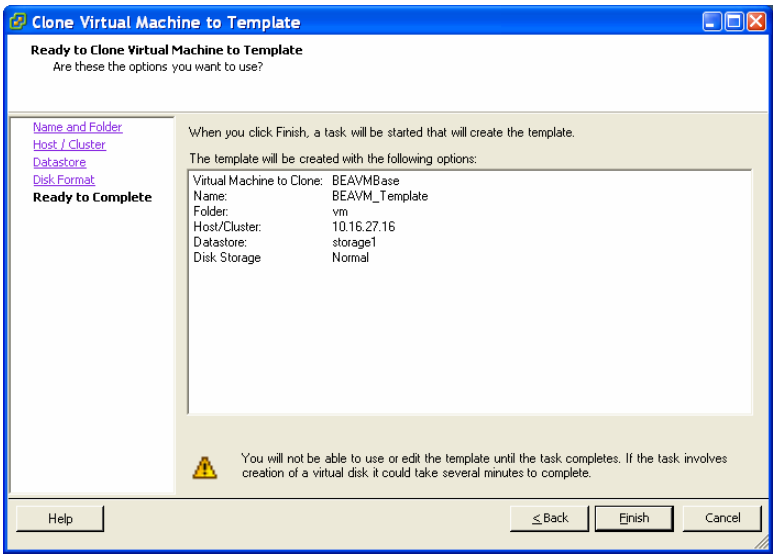
Select the “host” on which to store the template.


Clone Virtual Machine to Template
Choose a Datastore for the Template
Where do you want to store the template files?
Name and Folder
Host / Cluster
Datastore
Disk Format
Ready to Complete
Select a datastore in which to store the files for the template.
It is advisable to choose a datastore that is large enough to accomodate the template and all its virtual disk files, so that they may all reside in the same place.
Name
Capacity
Free
Type
Access
[storage1]
60.75 GB
55.76 GB
VMFS
Single host
Advanced >>
Help
< Back
Next >
Cancel

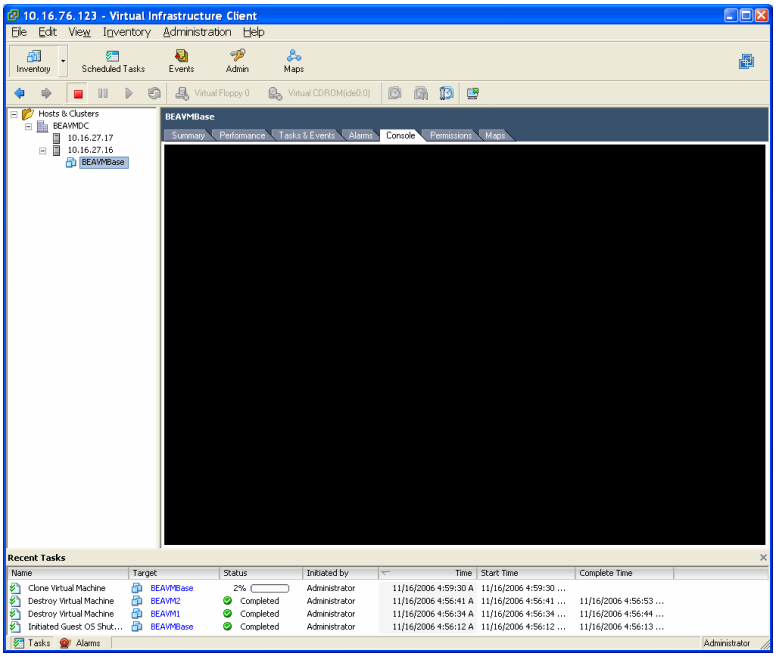
Provide a datastore.


Clone Virtual Machine to Template
Disk Format
In which format do you want to store the virtual disks?
Name and Folder
Host / Cluster
Datastore
Disk Format
Ready to Complete
Select a format in which to store the template's virtual disks
Normal
Leave the virtual disks in their normal virtual machine format. Use this option if you want to convert this template back into a running machine.
Compact
Compress the virtual disks to remove redundant information and save space. This is only supported on VMFS-3 datastores, and the server may ignore this for disks on other types of datastores.
Help
< Back
Next >
Cancel

Select “Normal”.

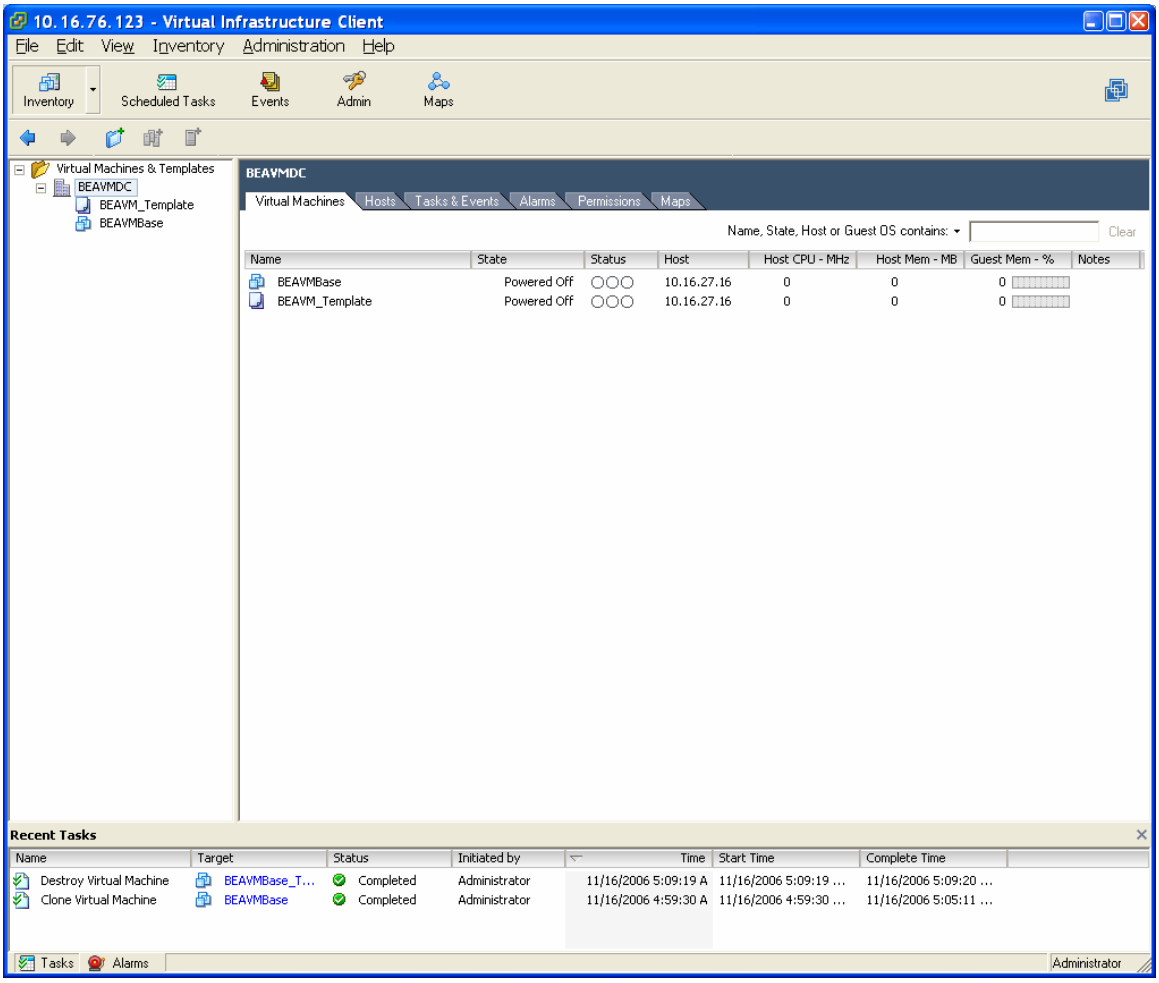

Clone Virtual Machine to Template
Ready to Clone Virtual Machine to Template
Are these the options you want to use?
Name and Folder
Host / Cluster
Datastore
Disk Format
Ready to Complete
When you click Finish, a task will be started that will create the template.
The template will be created with the following options:
Virtual Machine to Clone: BEAVMBase
Name: BEAVM_Template
Folder: vm
Host/Cluster: 10.16.27.16
Datastore: storage1
Disk Storage Normal
You will not be able to use or edit the template until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Click “Finish” to create the template. The task bar below will show you progress.


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Hosts & Clusters
BEAVMDC
10.16.27.17
10.16.27.16
BEAVMBase
BEAVMBase
Summary Performance Tasks & Events Alarms Console Permissions Maps
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Clone Virtual Machine BEAVMBase 2% Administrator 11/16/2006 4:59:30 A 11/16/2006 4:59:30 ...
Destroy Virtual Machine BEAVM2 Completed Administrator 11/16/2006 4:56:41 A 11/16/2006 4:56:41 ... 11/16/2006 4:56:53 ...
Destroy Virtual Machine BEAVM1 Completed Administrator 11/16/2006 4:56:34 A 11/16/2006 4:56:34 ... 11/16/2006 4:56:44 ...
Initiated Guest OS Shut... BEAVMBase Completed Administrator 11/16/2006 4:56:12 A 11/16/2006 4:56:12 ... 11/16/2006 4:56:13 ...
Tasks Alarms
Administrator

Progress can be seen in “recent tasks” window.

Click on inventory and pick “virtual machines & templates” to see the newly created template.



We have successfully created the template for BEA WLS Virtual Machines which now will be used as a generic Windows Server 2003 EE SP1 / BEA WLS 9.2 Image.

We will use this template to create our BEA WLS application server nodes (VMs) in later sections.

5.3 Provisioning BEA WebLogic Application Server Virtual Machine Node from Templates

The BEAVMBase image and template that were created are generic images. So while using “cloning” to provision instances of WLS nodes in a BEA environment, there are two distinct things that would occur:

1. BEA WLS virtual machine clone creation
2. BEA WLS virtual machine clone customization

Customization of the clone includes customization of the guest OS environment to make the OS image unique with unique SSID, licenses, network information etc. The application customization to create WLS instances on top of the operating system will be performed after cloning (either as a custom script or a set of applicable specific configuration – Ex: creating the BEA domain).

5.3.1 Preparing for Guest Operating System Customization

When you deploy a new virtual machine from a template or clone an existing virtual machine, you have the opportunity to customize the new guest operating system. The Guest Customization wizard guides you through the configuration options. Guest Optimization wizard will be invoked as part of the VM cloning process.

Before you run the Guest Customization wizard, if you intend to perform a guest customization, do the following:

Verify that your system meets the guest customization requirements.
Install the required components on the Windows machine where VirtualCenter is installed.

Note: Our discussion in this section is focused on Windows Server 2003 EE SP1 used as the guest OS in our lab deployment. Refer to the VMware documentation for other guest OS requirements.

The Windows guest OS environment is customized using “Sysprep” utility tools. This can be obtained either from the Microsoft website or from the Windows OS installation CD.

Make sure to create the following directory structure on the VirtualCenter machine where you will be creating clones and templates.

Locate where VirtualCenter 2 was installed on the system.
For example: C:\Program Files\VMware\VMware VirtualCenter 2\
Under this directory, go to “resources” folder. Create (if it does not exist already) a folder called “windows”.
Under windows, create folder “sysprep” and under “sysprep”, create folder “svr2003”.
The final destination for the “sysprep” tools is:
C:\program files\VMware\VMware VirtualCenter 2\resources\windows\sysprep\svr2003.

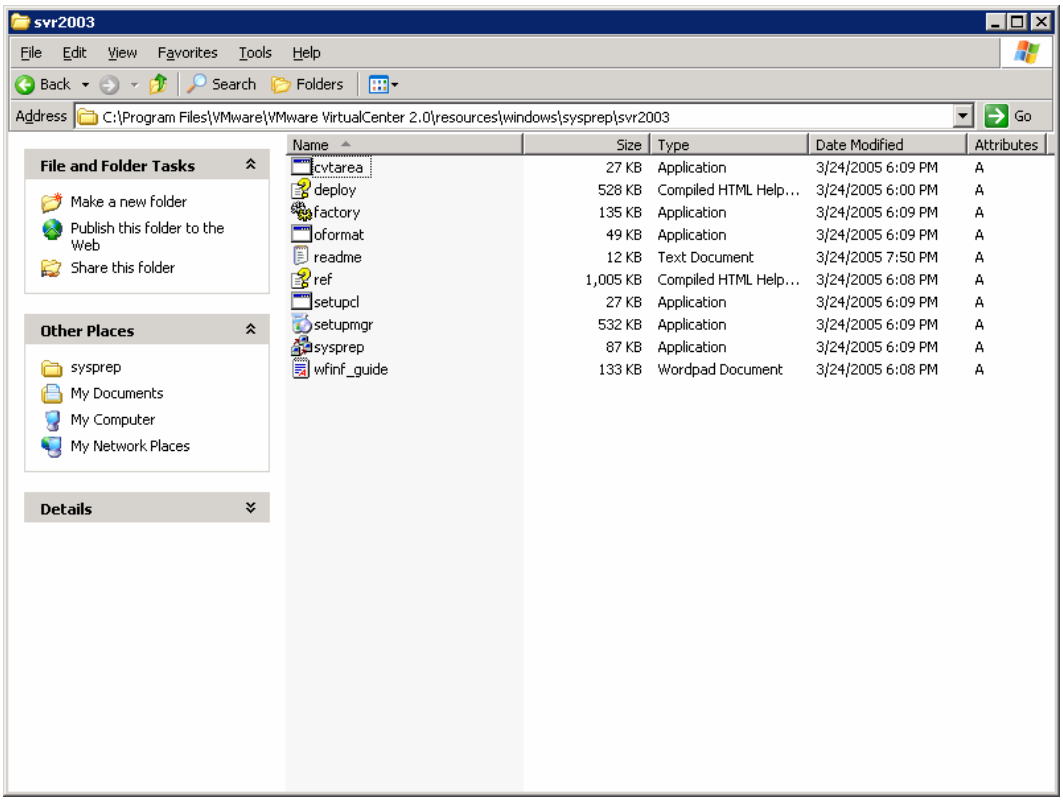
If you are running Windows XP or Windows 2000, then the corresponding directory would be
…\resources\windows\sysprep\2k\
...\resources\windows\sysprep\xp\

Go to the OS installation CD.

1. Locate the DEPLOY.CAB file in the directory \support\tools
2. Open and expand the DEPLOY.CAB file using a tool such as winzip.exe or another tool capable of reading Microsoft CAB files.
3. Extract the files to the directory appropriate to your guest operating system.

Ex: C:\program files\VMware\VMware VirtualCenter 2\resources\windows\sysprep\svr2003

After you have extracted the files from DEPLOY.CAB, you should see:


svr2003
File Edit View Favorites Tools Help
Back Search Folders
Address C:\Program Files\VMware\VMware VirtualCenter 2.0\resources\windows\sysprep\svr2003
Go
File and Folder Tasks
Make a new folder
Publish this folder to the Web
Share this folder
Other Places
sysprep
My Documents
My Computer
My Network Places
Details
Name Size Type Date Modified Attributes
cytarea 27 KB Application 3/24/2005 6:09 PM A
deploy 528 KB Compiled HTML Help... 3/24/2005 6:00 PM A
factory 135 KB Application 3/24/2005 6:09 PM A
oformat 49 KB Application 3/24/2005 6:09 PM A
readme 12 KB Text Document 3/24/2005 7:50 PM A
ref 1,005 KB Compiled HTML Help... 3/24/2005 6:08 PM A
setupcl 27 KB Application 3/24/2005 6:09 PM A
setupmgr 532 KB Application 3/24/2005 6:09 PM A
sysprep 87 KB Application 3/24/2005 6:09 PM A
wfinf_guide 133 KB Wordpad Document 3/24/2005 6:08 PM A

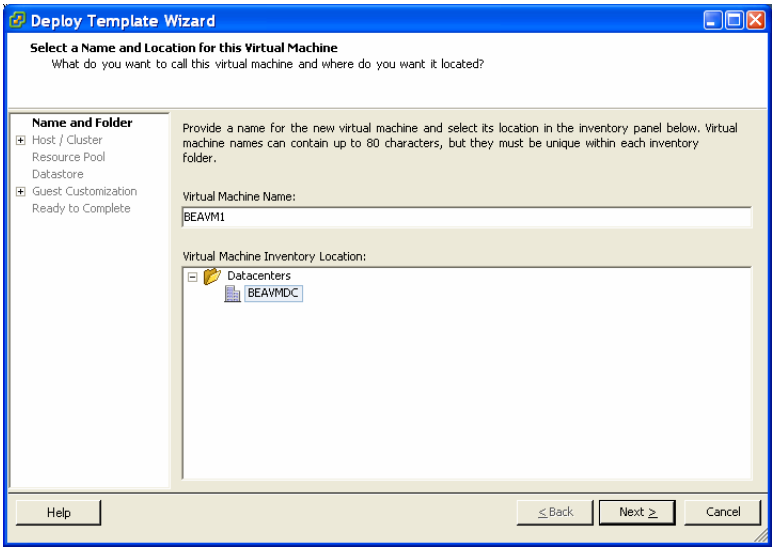
4. Repeat this procedure to extract sysprep files for each of the Windows guest operating systems (Windows 2000/XP/2003) you plan to customize using VirtualCenter.

We are now ready to customize a new virtual machine during the cloning process.

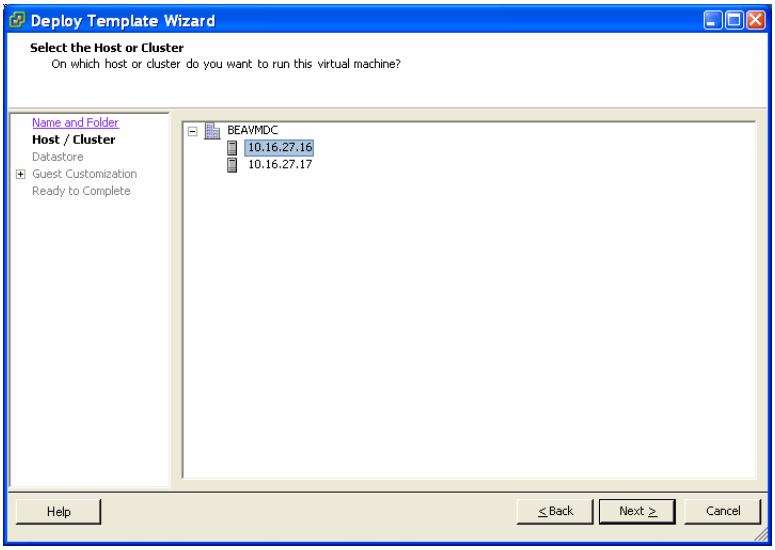
Start the “cloning” process using the template (BEAVM_Template).

5.3.2 Cloning a New BEA WLS Virtual Machine from Template

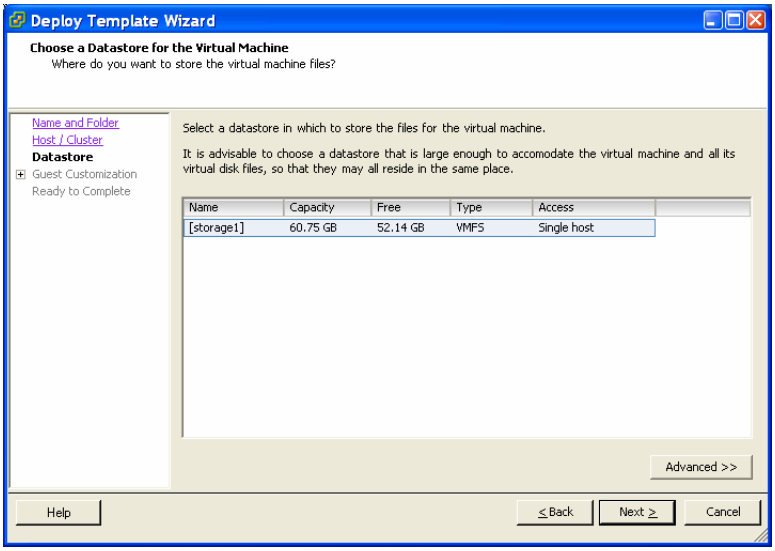
Right click on BEAVM_Template and select “deploy virtual machine from this template”.


Deploy Template Wizard
Select a Name and Location for this Virtual Machine
What do you want to call this virtual machine and where do you want it located?
Name and Folder
Host / Cluster
Resource Pool
Datastore
Guest Customization
Ready to Complete
Provide a name for the new virtual machine and select its location in the inventory panel below. Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder.
Virtual Machine Name:
BEAVM1
Virtual Machine Inventory Location:
Datacenters
BEAVMDC
Help
< Back
Next >
Cancel

Enter the name of the new VM: BEAVM1, location: BEAVMDC

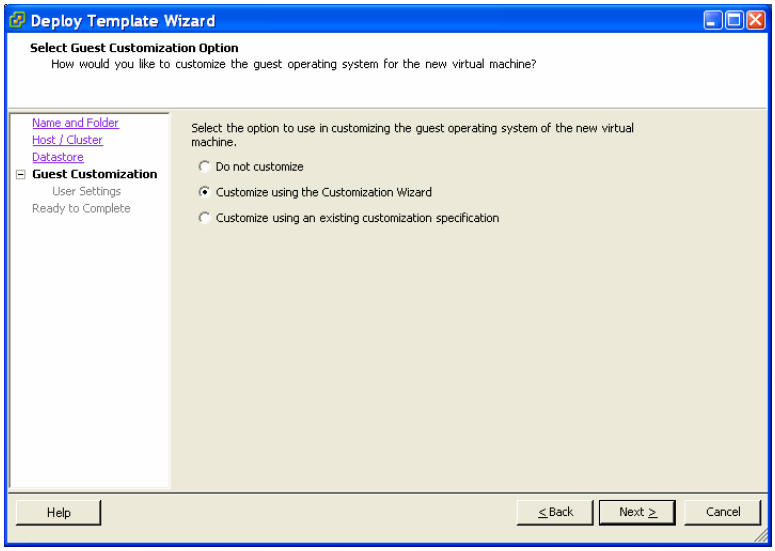


Select ESX Server host on which the VM will be created (we select 10.16.27.16)


Deploy Template Wizard
Choose a Datastore for the Virtual Machine
Where do you want to store the virtual machine files?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
Select a datastore in which to store the files for the virtual machine.
It is advisable to choose a datastore that is large enough to accomodate the virtual machine and all its virtual disk files, so that they may all reside in the same place.
Name
Capacity
Free
Type
Access
[storage1]
60.75 GB
52.14 GB
VMFS
Single host
Advanced >>
Help
< Back
Next >
Cancel

Select where the VM will be stored. (“Storage1”).

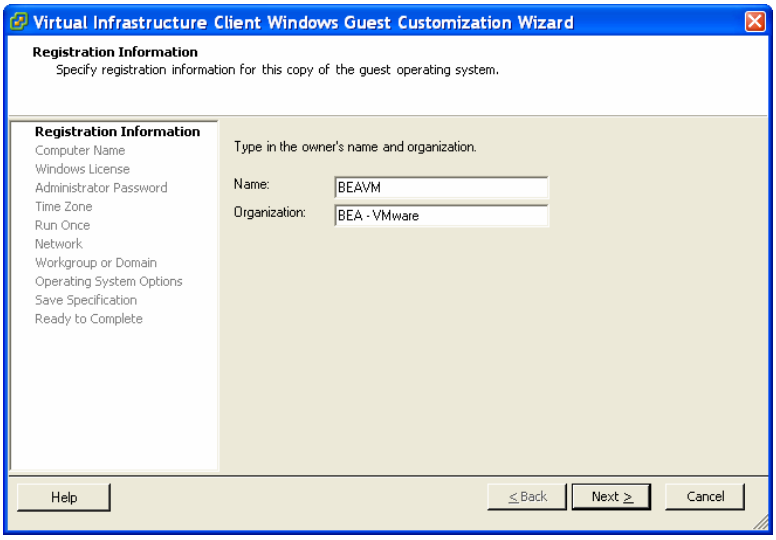
If you have completed your “preparation steps” for Windows OS on the VirtualCenter system successfully, you should see the screen “select guest customization option”. If there are problems in your “sysprep” setup, you will get “do not customize” as the only option.


Deploy Template Wizard
Select Guest Customization Option
How would you like to customize the guest operating system for the new virtual machine?
Name and Folder
Host / Cluster
Datastore
Guest Customization
User Settings
Ready to Complete
Select the option to use in customizing the guest operating system of the new virtual machine.
Do not customize
Customize using the Customization Wizard
Customize using an existing customization specification
Help
< Back
Next >
Cancel

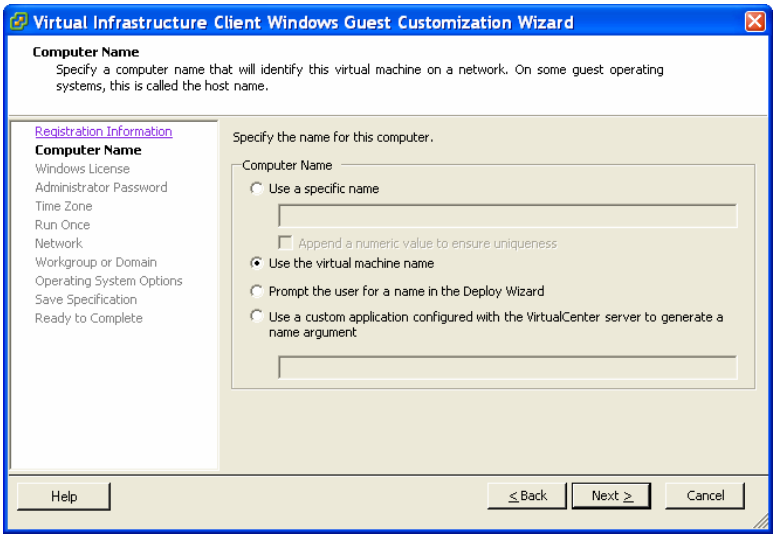
Click on “customize using the customization wizard”. You only have to do this once when cloning from the base BEAVM_Template for the first time.

Note that once you customize, you have the option of saving these customization options as a specification that can be repeatedly used in the future during new VM cloning (this is the 3rd option in the screen above).

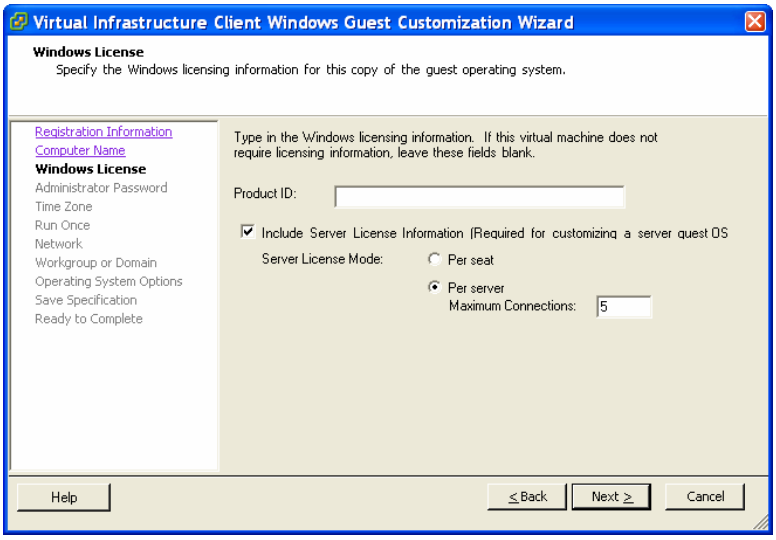
Enter owner name and organization.



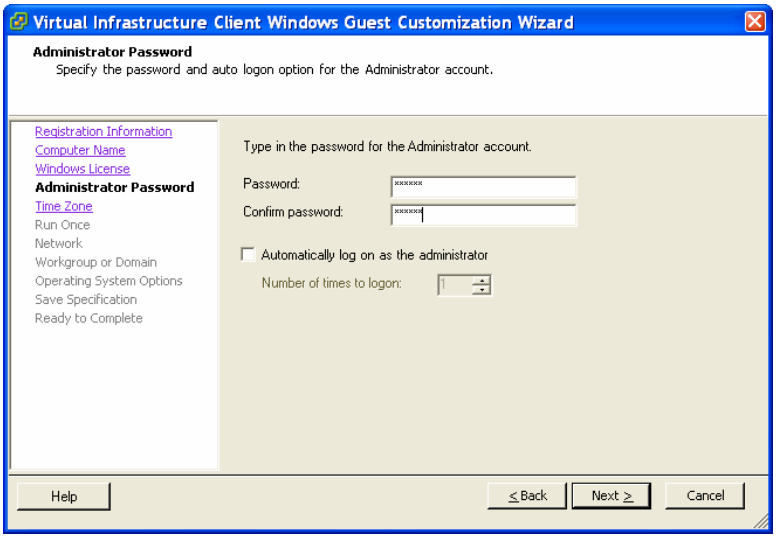
Specify a hostname for the computer or use the VM name (we selected to use VM name).


Virtual Infrastructure Client Windows Guest Customization Wizard
Computer Name
Specify a computer name that will identify this virtual machine on a network. On some guest operating systems, this is called the host name.
Registration Information
Computer Name
Windows License
Administrator Password
Time Zone
Run Once
Network
Workgroup or Domain
Operating System Options
Save Specification
Ready to Complete
Specify the name for this computer.
Computer Name
Use a specific name
Append a numeric value to ensure uniqueness
Use the virtual machine name
Prompt the user for a name in the Deploy Wizard
Use a custom application configured with the VirtualCenter server to generate a name argument
Help
< Back
Next >
Cancel

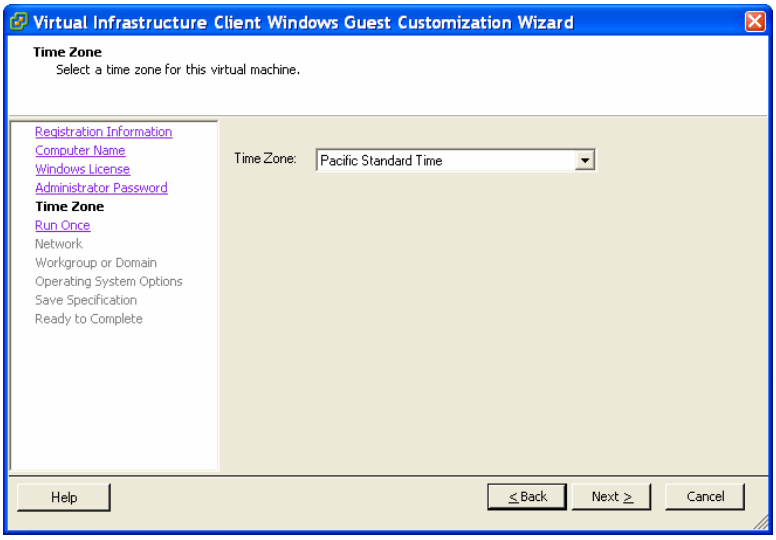
Leave the license key information blank. We can provide the keys during the system boot after cloning.



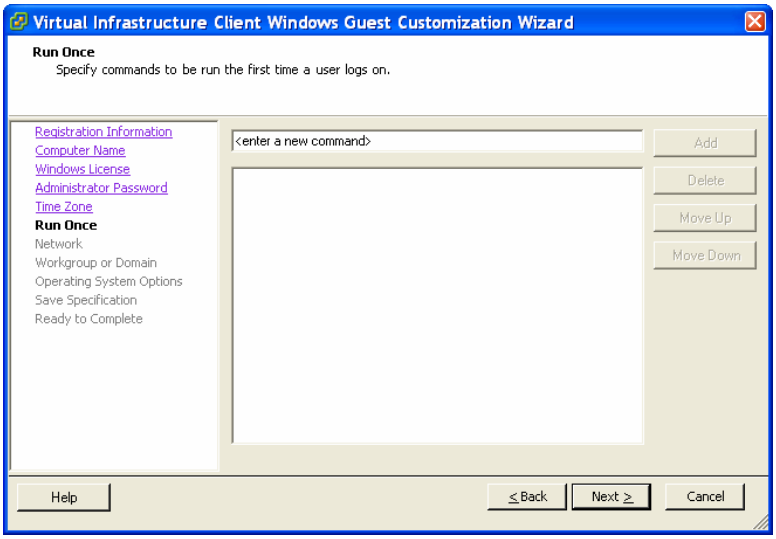
Enter the password for the Windows Administrator account.



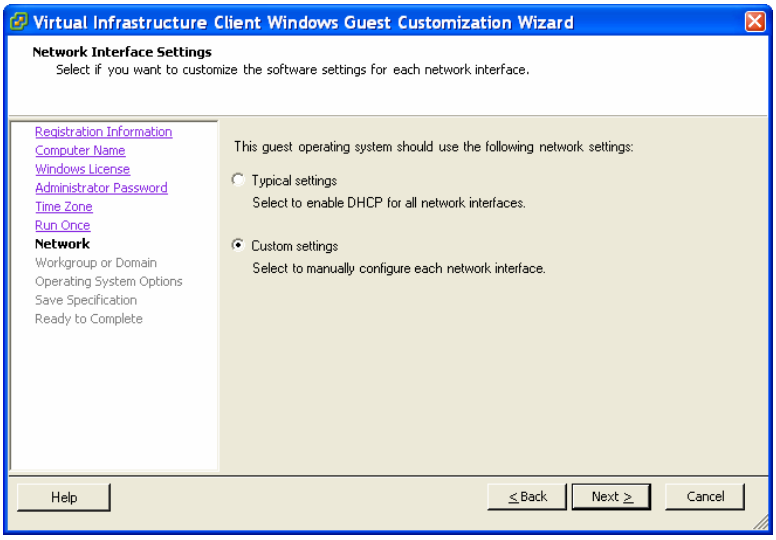
Enter your default time zone.



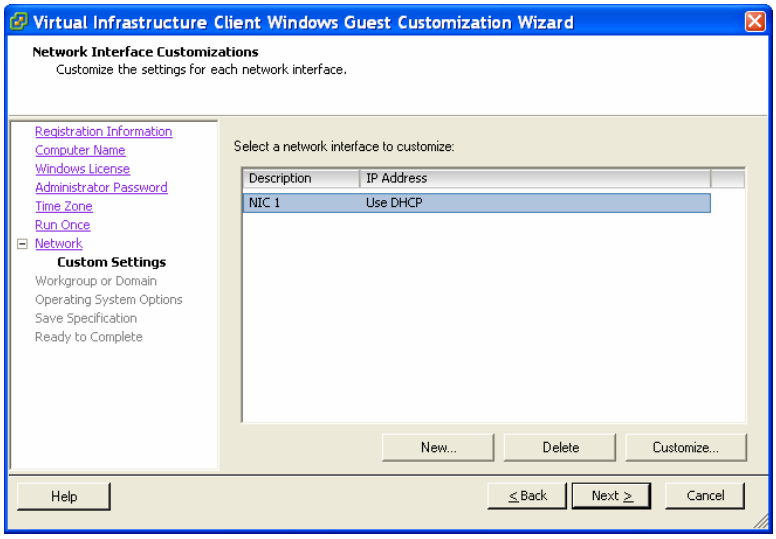
Enter scripts and commands you would like to run when the system comes up and user logs in the first time. These scripts can be customization scripts for BEA or for other software applications in your WLS node.



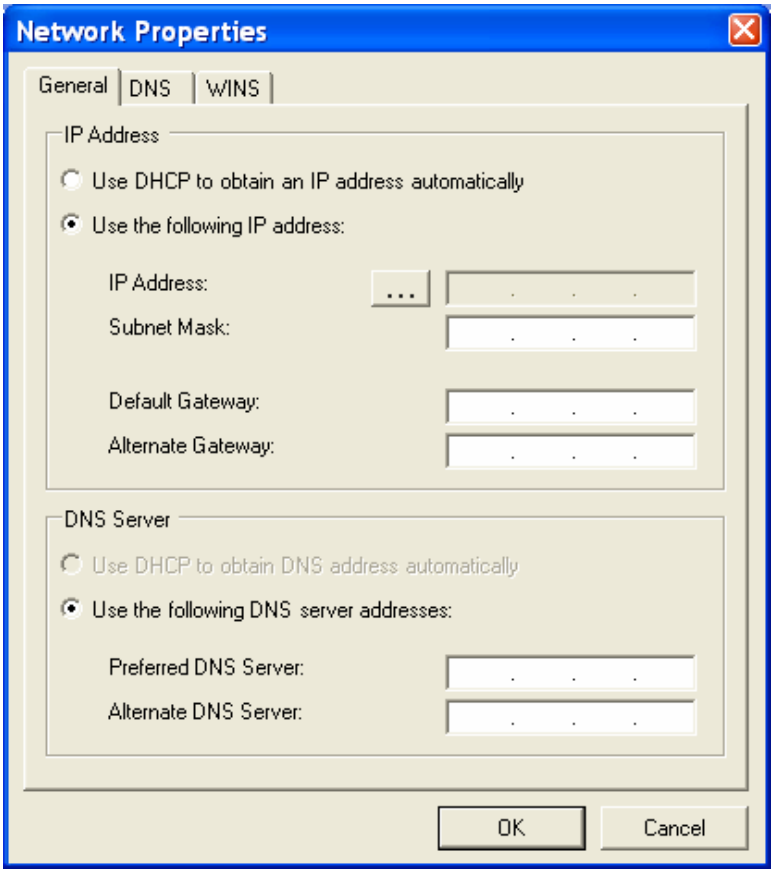
Click “Next”



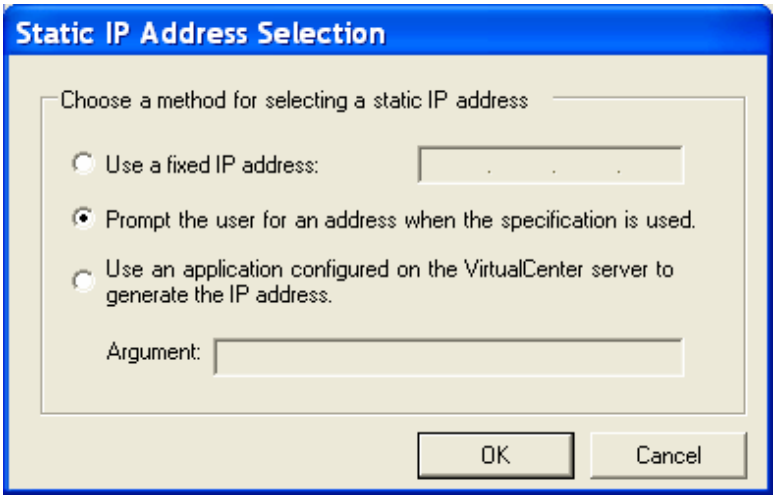
If you want to use DHCP to automatically assign network information, select “typical” settings. We picked customer settings to provide static IP address.



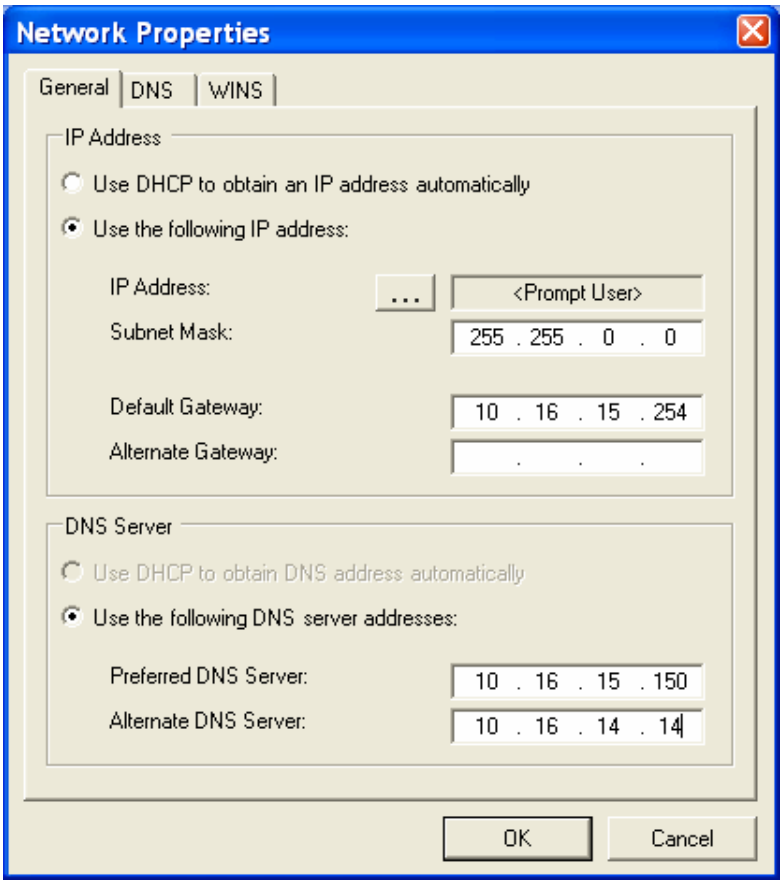
Click “Customize”



Click on the drop box next to IP address.

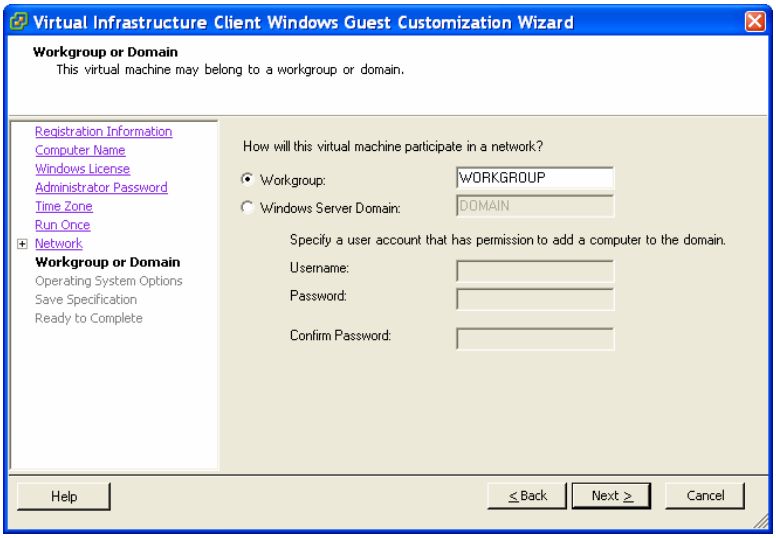

Static IP Address Selection
Choose a method for selecting a static IP address
Use a fixed IP address:
Prompt the user for an address when the specification is used.
Use an application configured on the VirtualCenter server to generate the IP address.
Argument:
OK
Cancel

Prompt the user for the address during the cloning process. This option will help you provide static IP to your BEA WLS virtual machines during the cloning process.

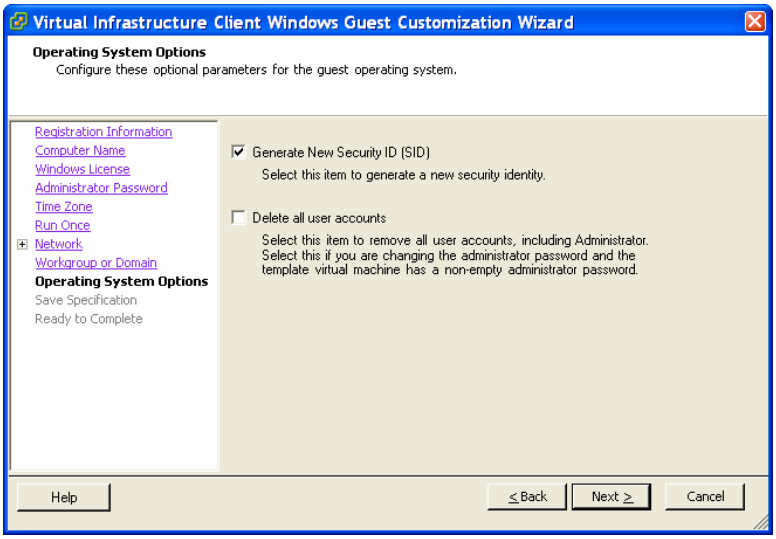


Fill in the rest of the network information.

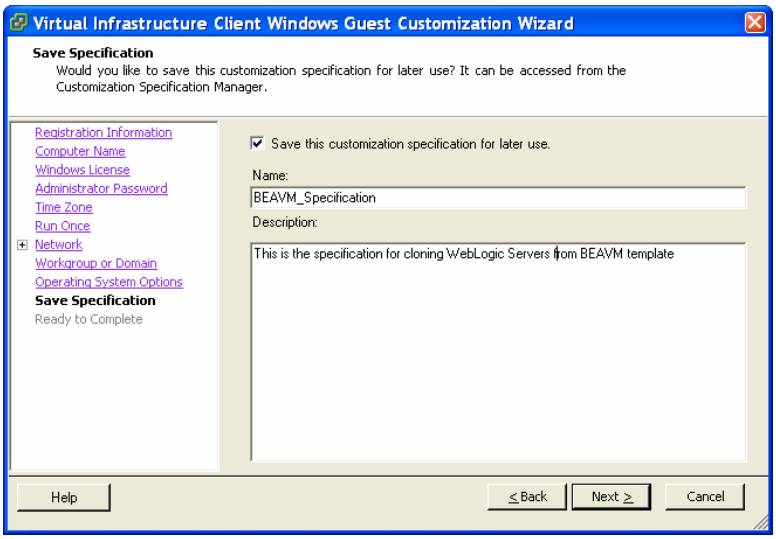
Click Ok to return to the previous screen and click “next”.



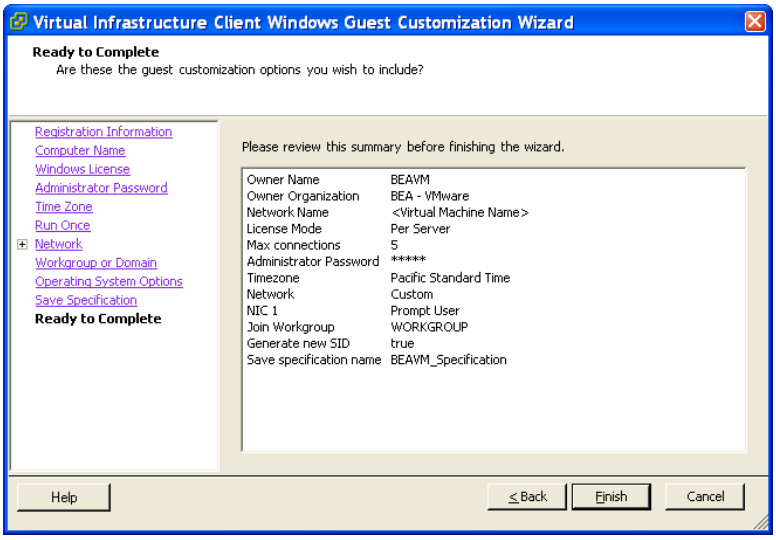
Provide your domain name. We used “workgroup” in the lab.


Virtual Infrastructure Client Windows Guest Customization Wizard
Operating System Options
Configure these optional parameters for the guest operating system.
Registration Information
Computer Name
Windows License
Administrator Password
Time Zone
Run Once
Network
Workgroup or Domain
Operating System Options
Save Specification
Ready to Complete
Generate New Security ID (SID)
Select this item to generate a new security identity.
Delete all user accounts
Select this item to remove all user accounts, including Administrator.
Select this if you are changing the administrator password and the template virtual machine has a non-empty administrator password.
Help
< Back
Next >
Cancel

Check “Generate New Security ID” box. This will generate new and unique SID for the BEA WLS Windows environment.

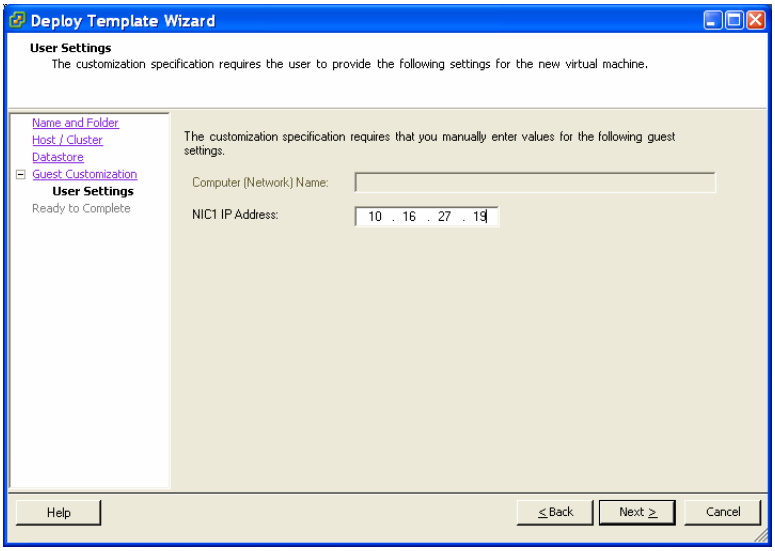


Save all the customization parameters as a custom specification (BEAVM_Specification). Customization specifications help set up standard (parameters) information for guest OS and application customizations.

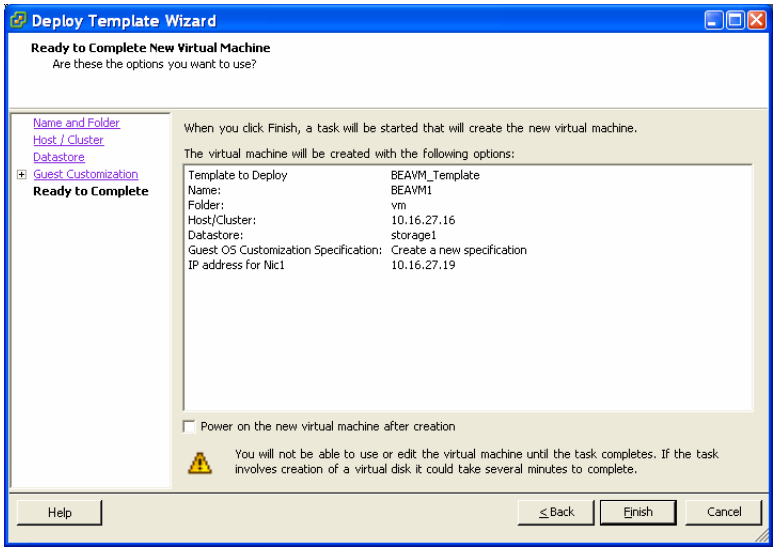


Click “Finish”. A customization specification by name “BEAVM_Specification” will be created as part of the cloning process and can be used for future cloning from the template.

Now prior to the start of the new VM cloning process, you are prompted for the IP address of this VM.


Deploy Template Wizard
User Settings
The customization specification requires the user to provide the following settings for the new virtual machine.
Name and Folder
Host / Cluster
Datastore
Guest Customization
User Settings
Ready to Complete
The customization specification requires that you manually enter values for the following guest settings.
Computer (Network) Name:
NIC1 IP Address: 10 . 16 . 27 . 19
Help
< Back
Next >
Cancel

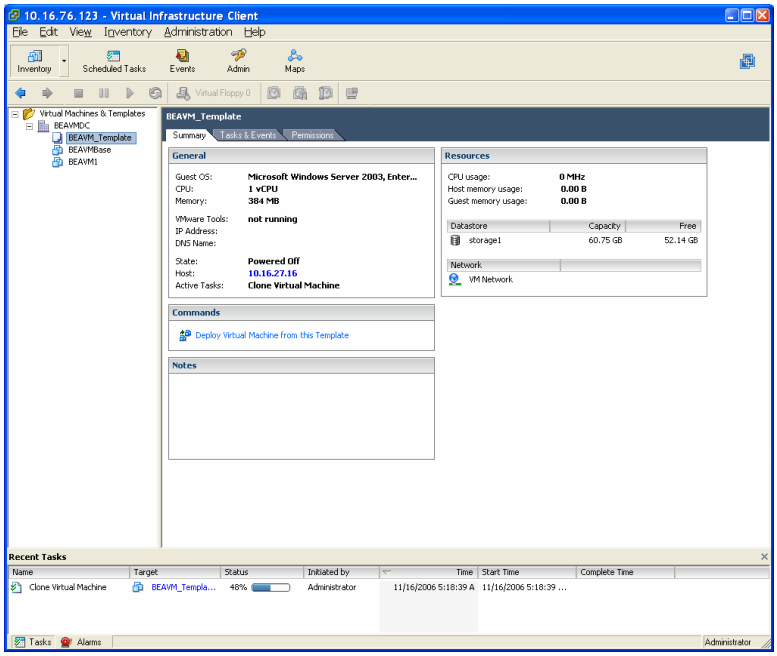
Provide your IP address (note that the computer name field is not enabled as we have already provided the “VM name” as the host name)

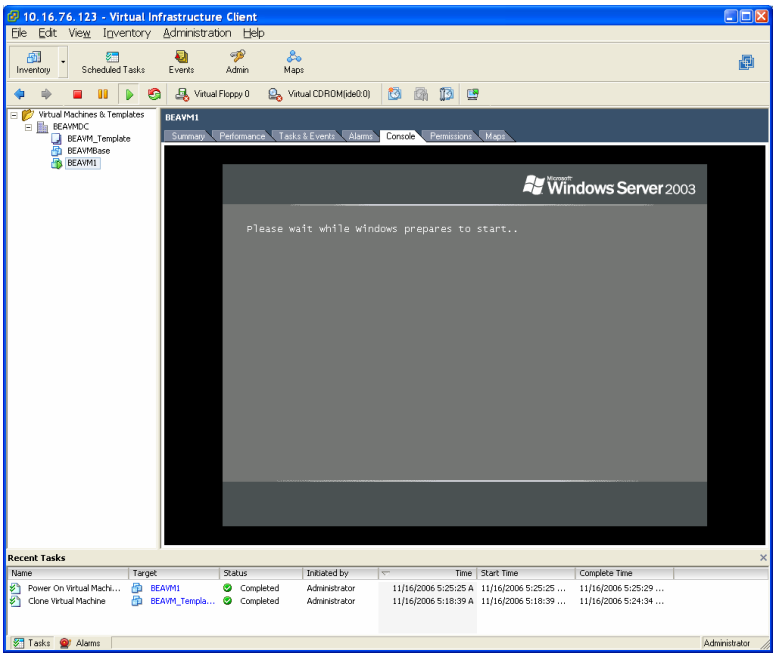

Deploy Template Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Template to Deploy BEAVM_Template
Name: BEAVM1
Folder: vm
Host/Cluster: 10.16.27.16
Datastore: storage1
Guest OS Customization Specification: Create a new specification
IP address for Nic1 10.16.27.19
Power on the new virtual machine after creation
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Click “Finish” to start the cloning process.

The “recent tasks” bar will show you the status.

Once completed, right click the new BEAVM1 and “power on”




10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Virtual Machines & Templates
BEAVMDC
BEAVM_Template
BEAVMBase
BEAVM1
BEAVM1
Summary Performance Tasks & Events Alarms Console Permissions Maps
Windows Server 2003
Please wait while Windows prepares to start..
Recent Tasks
Name Target Status Initiated by Time Start Time Complete Time
Power On Virtual Machi... BEAVM1 Completed Administrator 11/16/2006 5:25:25 A 11/16/2006 5:25:25 ... 11/16/2006 5:25:29 ...
Clone Virtual Machine BEAVM_Templa... Completed Administrator 11/16/2006 5:18:39 A 11/16/2006 5:18:39 ... 11/16/2006 5:24:34 ...
Tasks Alarms
Administrator

Enter the license key when prompted.

The system should configure and reboot again to come to the login prompt. You should now be able to use Windows's Remote Desktop Connection to remotely log into the system.

Login and check network settings. This should be the IP address and network information you provided during the cloning process. You computer name should be set to the "VM name".

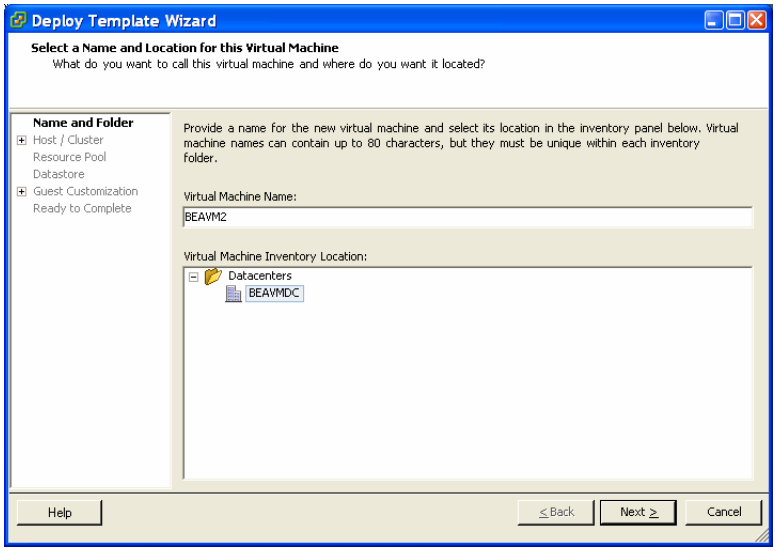
The final customization steps occur when the new virtual machine boots for the first time. After powering on for the first time, a customized Windows virtual machine automatically reboots twice to finalize the configuration process. It becomes operational when the OS logon page appears after the second reboot. This process can take several minutes, depending on the speed and load of the host. If any errors occur during the final configuration process, events are logged to the guest operating system's event database. To view these errors, choose Start > Program > Administrative Tools > Event Viewer from the Windows Start menu.
If any of the information required in the configuration finalization process is not correct, the guest operating system pauses when the new virtual machine boots and waits for you to enter the correct information.

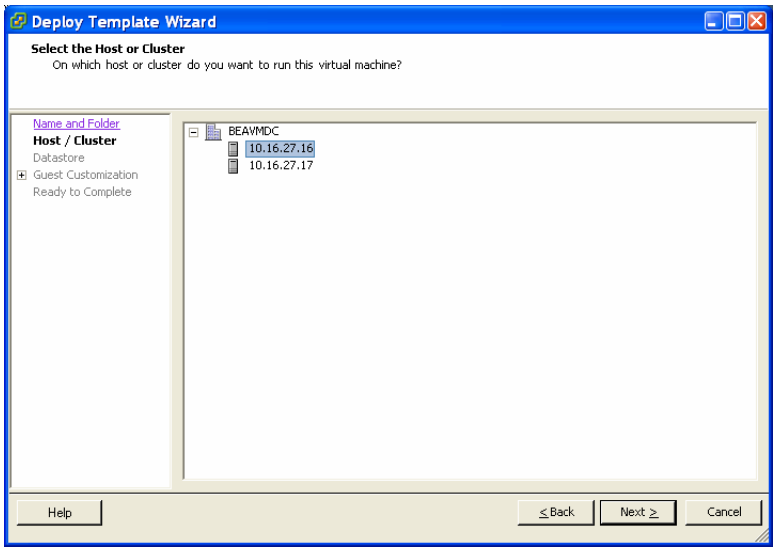
Incorrect information might include computer name, product key, domain name, network (DHCP) settings etc.

5.3.3 Provisioning BEA WLS Nodes Using Customization Specification

We can use the customization specification created in the previous cloning steps to customize additional BEA WLS nodes.

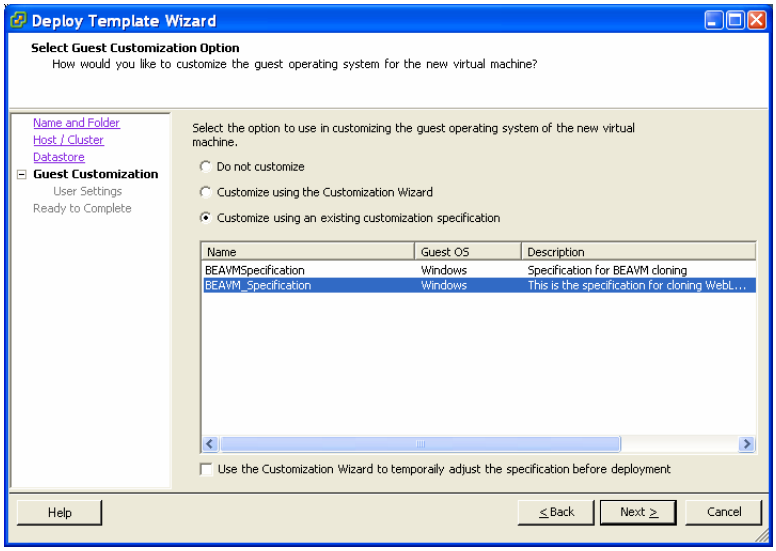
Click on the BEA WLS virtual machine template (BEAVM_Template), select "deploy a new virtual machine from this template". We will deploy a second WLS node (BEAVM2) using the custom specifications.


Deploy Template Wizard
Select a Name and Location for this Virtual Machine
What do you want to call this virtual machine and where do you want it located?
Name and Folder
Host / Cluster
Resource Pool
Datastore
Guest Customization
Ready to Complete
Provide a name for the new virtual machine and select its location in the inventory panel below. Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder.
Virtual Machine Name:
BEAVM2
Virtual Machine Inventory Location:
Datacenters
BEAVMDC
Help
< Back
Next >
Cancel



Just follow the steps as outlined in the earlier section.

When you get to “Guest Customization Option”, select “Customize using an existing specification” (remember, in the last cloning we selected “customize using customization wizard”).

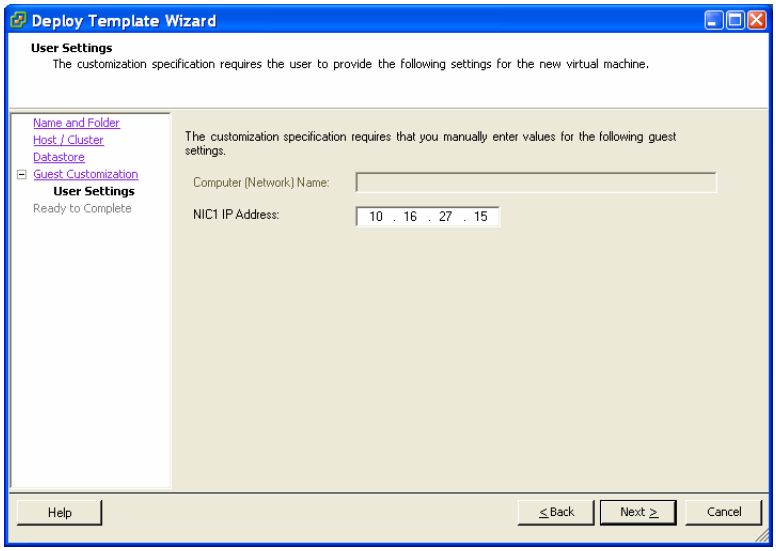


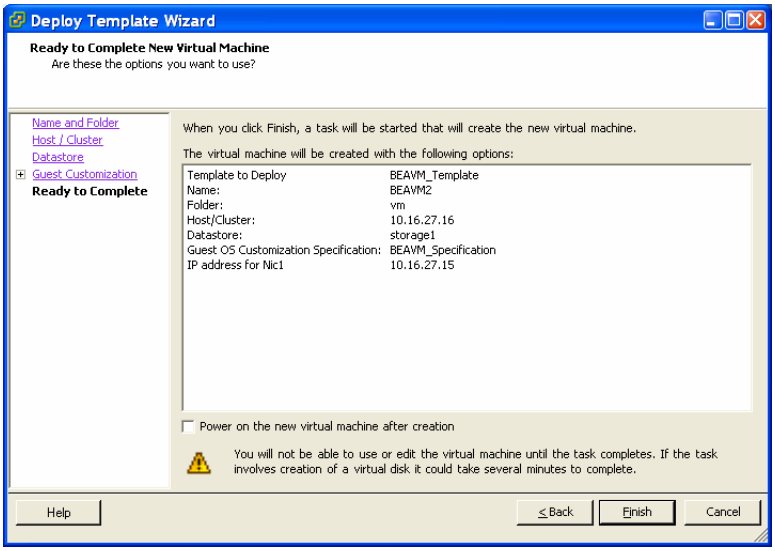
Select the specification (BEAVM_Specification was the specification we created in the last cloning process) to be used.

Check the “Use Customization Wizard to temporarily adjust specification before deployment” box below to make adjustments to the specification prior to deployment, if you want to change some of the specification parameter values. We took the default (unchecked).

This will take you directly to the cloning process.

Supply the IP address of the clone.


Deploy Template Wizard
User Settings
The customization specification requires the user to provide the following settings for the new virtual machine.
Name and Folder
Host / Cluster
Datastore
Guest Customization
User Settings
Ready to Complete
The customization specification requires that you manually enter values for the following guest settings.
Computer (Network) Name:
NIC1 IP Address:
10 . 16 . 27 . 15
Help
< Back
Next >
Cancel


Deploy Template Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Template to Deploy BEAVM_Template
Name: BEAVM2
Folder: vm
Host/Cluster: 10.16.27.16
Datastore: storage1
Guest OS Customization Specification: BEAVM_Specification
IP address for Nic1 10.16.27.15
Power on the new virtual machine after creation
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Click “finish” to start the cloning process.

Once the cloning is completed, “power on” BEAVM2.

The system should come up and ask for the licensing keys. Once the keys are entered the system should configure itself and come up to login prompt. Login to verify that the configurations worked correctly and made the 2nd BEA WLS VM clone unique.

We created another VM (BEAVM3) on the 2nd host (10.16.27.17).

Now we are ready to customize the BEA WebLogic application server environment on these VM nodes (BEAVM1, BEAVM2 and BEAVM3) to create a running BEA WLS application server environment.

6.0 BEA WebLogic Server Virtual Machine Application Customization

In this section, we will go through the steps to configure the three VM nodes we have created into a functional BEA WLS environment. The following steps will be performed as part of the customization.

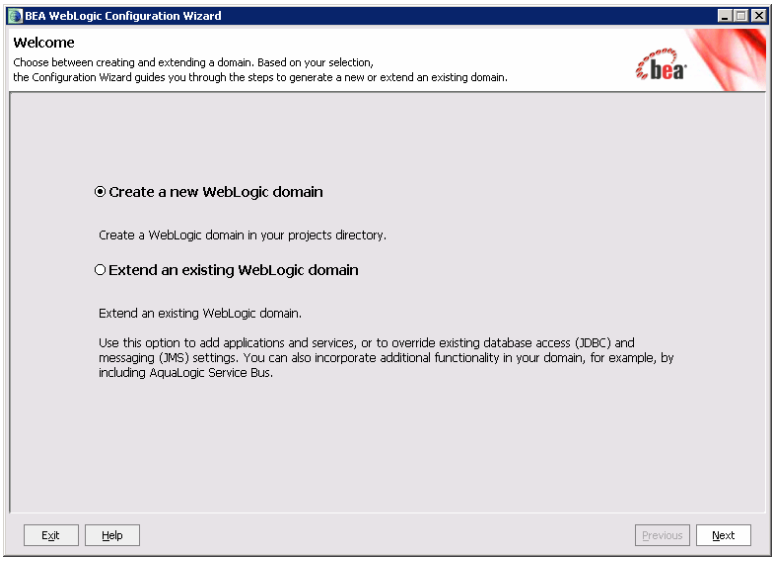
1. A WebLogic Domain will be created
    a. BEAVM1 will be configured as the admin server node
        i. BEAVM1 will also be configured as managed server 1 node running HTTP Proxy for a BEA cluster
    b. BEAVM2 will be configured as the managed server 2 node
    c. BEA VM3 will be configured as the managed server 3 node
    d. BEAVM2 and BEAVM3 managed servers will be part of a BEA cluster load-balanced by the HTTP proxy server on managed server 1.

At the end of this process, you will have a fully functional BEA WebLogic Application Server domain.

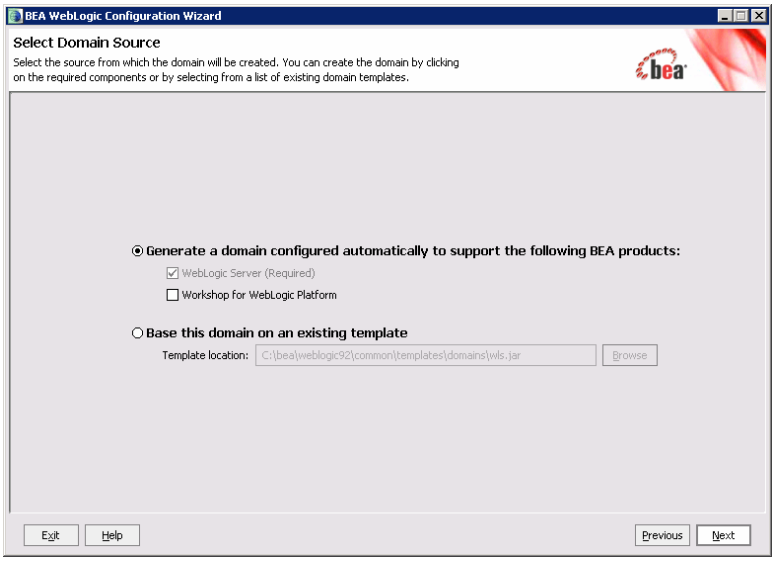
6.1 Creating BEA WebLogic domain

On BEAVM1

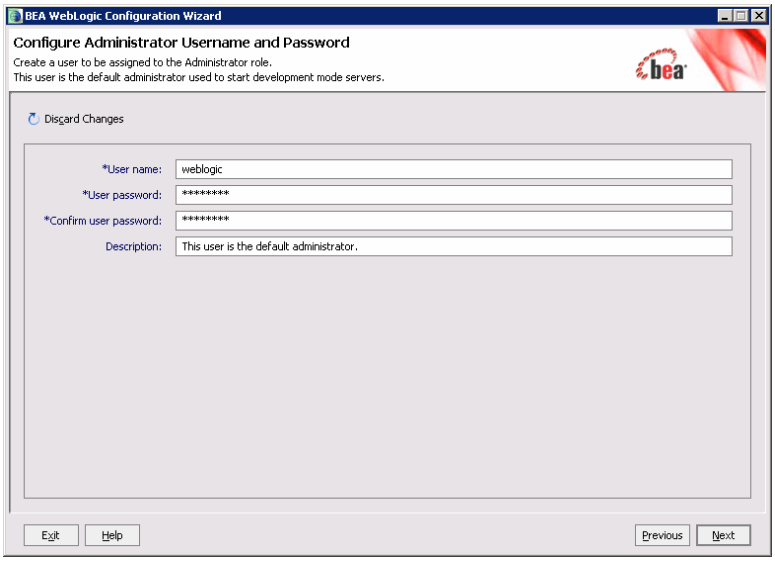
Go to all programs → BEA products → tools → configuration wizard


BEA WebLogic Configuration Wizard
Welcome
Choose between creating and extending a domain. Based on your selection, the Configuration Wizard guides you through the steps to generate a new or extend an existing domain.
bea
Create a new WebLogic domain
Create a WebLogic domain in your projects directory.
Extend an existing WebLogic domain
Extend an existing WebLogic domain.
Use this option to add applications and services, or to override existing database access (JDBC) and messaging (JMS) settings. You can also incorporate additional functionality in your domain, for example, by including AquaLogic Service Bus.
Exit
Help
Previous
Next

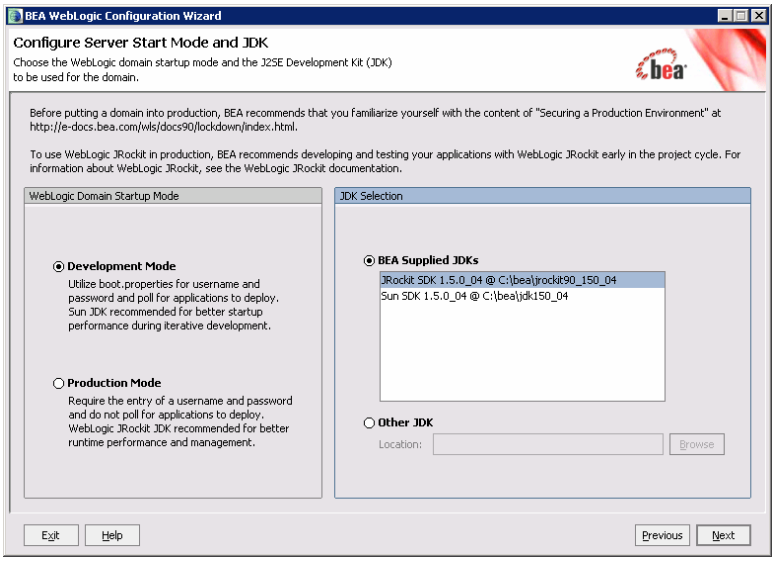
Select “Create new WebLogic domain”.


BEA WebLogic Configuration Wizard
Select Domain Source
Select the source from which the domain will be created. You can create the domain by clicking on the required components or by selecting from a list of existing domain templates.
Generate a domain configured automatically to support the following BEA products:
WebLogic Server (Required)
Workshop for WebLogic Platform
Base this domain on an existing template
Template location:
C:\bea\weblogic92\common\templates\domains\wls.jar
Browse
Exit
Help
Previous
Next

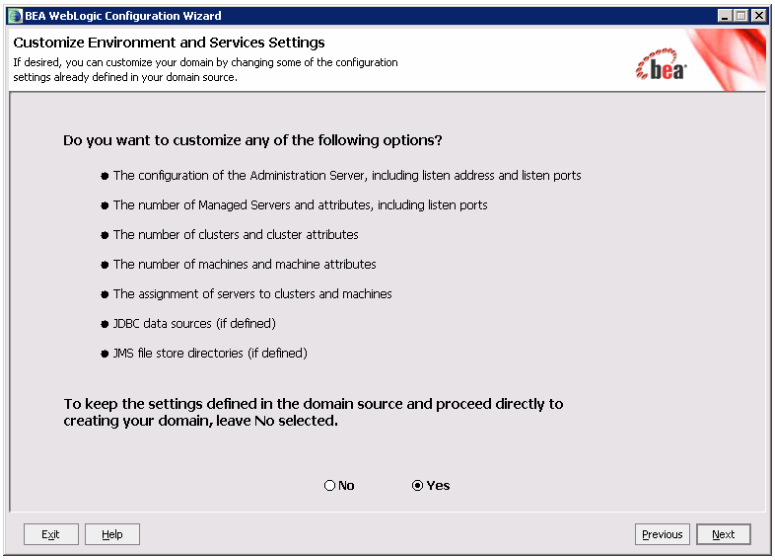
Take the default settings and clieck “Next”.



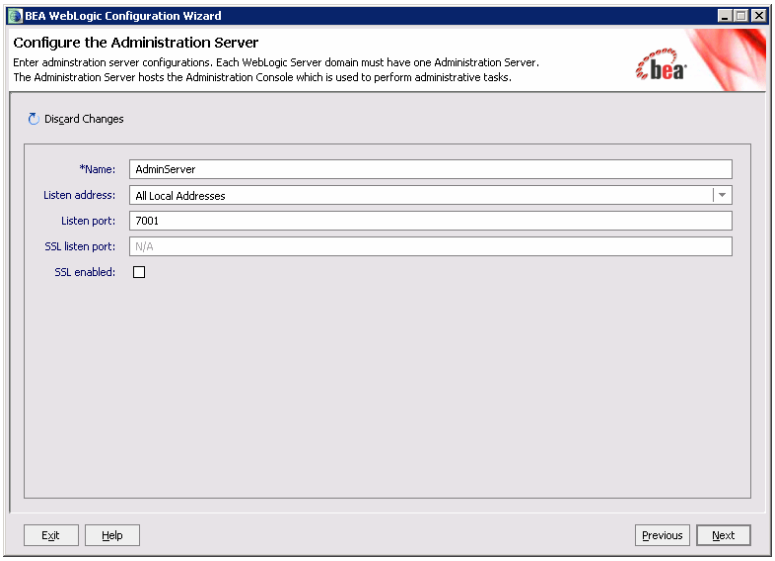
Provide the username and password for the WebLogic administrator.


BEA WebLogic Configuration Wizard
Configure Server Start Mode and JDK
Choose the WebLogic domain startup mode and the J2SE Development Kit (JDK) to be used for the domain.
Before putting a domain into production, BEA recommends that you familiarize yourself with the content of "Securing a Production Environment" at http://e-docs.bea.com/wls/docs90/lockdown/index.html.
To use WebLogic JRockit in production, BEA recommends developing and testing your applications with WebLogic JRockit early in the project cycle. For information about WebLogic JRockit, see the WebLogic JRockit documentation.
WebLogic Domain Startup Mode
Development Mode
Utilize boot.properties for username and password and poll for applications to deploy. Sun JDK recommended for better startup performance during iterative development.
Production Mode
Require the entry of a username and password and do not poll for applications to deploy. WebLogic JRockit JDK recommended for better runtime performance and management.
JDK Selection
BEA Supplied JDKs
JRockit SDK 1.5.0_04 @ C:\bea\jrockit90_150_04
Sun SDK 1.5.0_04 @ C:\bea\jdk150_04
Other JDK
Location:
Browse
Exit
Help
Previous
Next

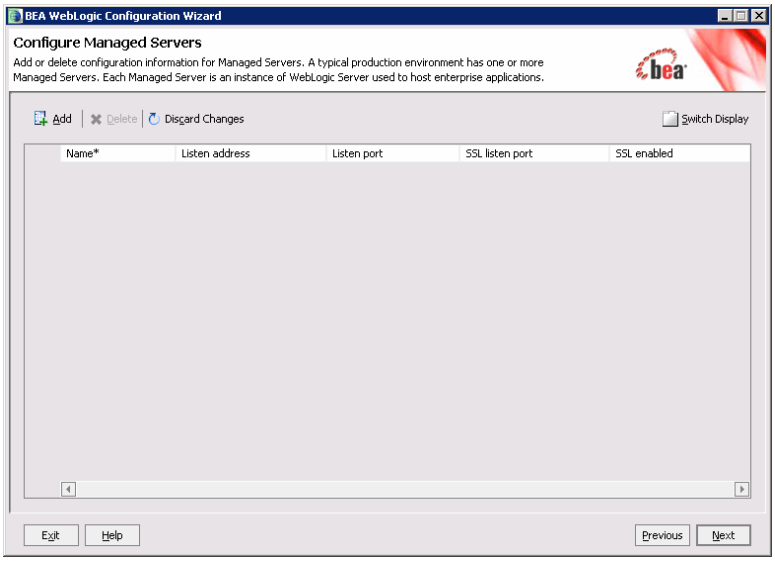
Select appropriate “Startup Mode”. (We selected “Development Mode”) Select “BEA supplied JDKs” → “ JRockit SDK


BEA WebLogic Configuration Wizard
Customize Environment and Services Settings
If desired, you can customize your domain by changing some of the configuration settings already defined in your domain source.
Do you want to customize any of the following options?
The configuration of the Administration Server, including listen address and listen ports
The number of Managed Servers and attributes, including listen ports
The number of clusters and cluster attributes
The number of machines and machine attributes
The assignment of servers to clusters and machines
JDBC data sources (if defined)
JMS file store directories (if defined)
To keep the settings defined in the domain source and proceed directly to creating your domain, leave No selected.
No
Yes
Exit
Help
Previous
Next

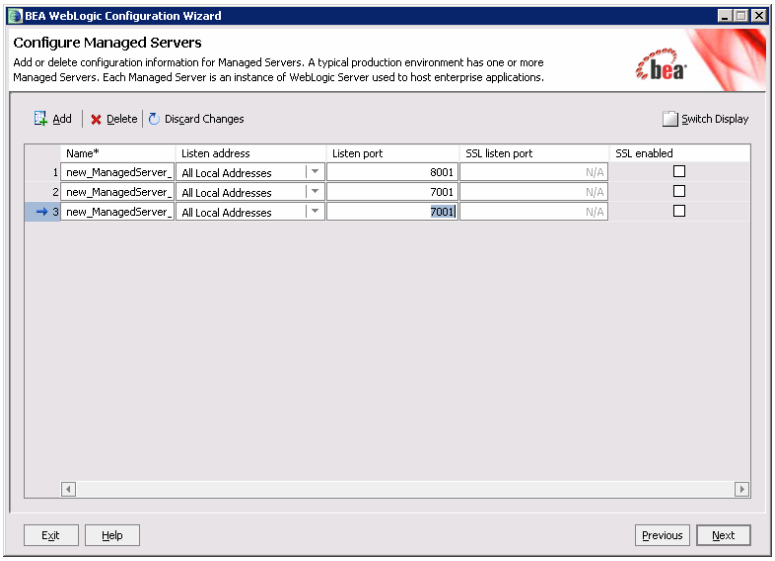
Select “default” (yes).



Provide the admin server configuration information (name, listen address and port). We took the “default”.



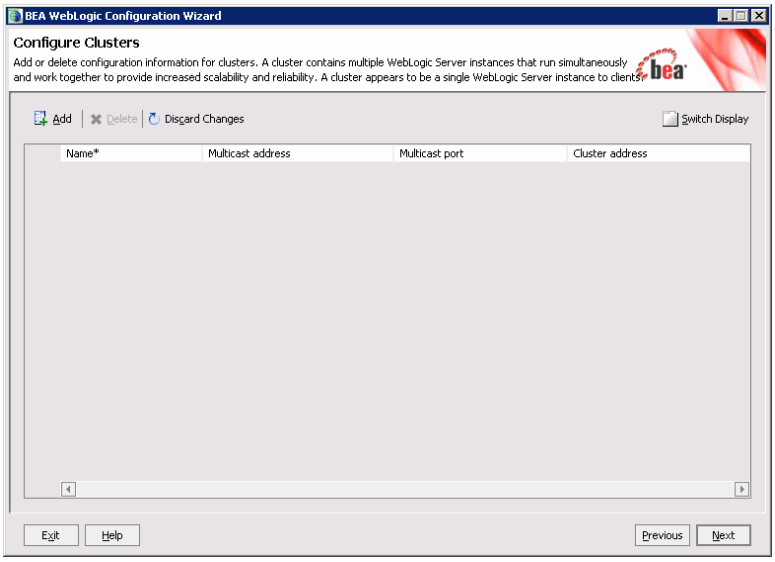
Click “Add” to add the managed servers.


BEA WebLogic Configuration Wizard
Configure Managed Servers
Add or delete configuration information for Managed Servers. A typical production environment has one or more Managed Servers. Each Managed Server is an instance of WebLogic Server used to host enterprise applications.
Add
Delete
Discard Changes
Switch Display
Name*
Listen address
Listen port
SSL listen port
SSL enabled
1 new_ManagedServer_ All Local Addresses 8001 N/A
2 new_ManagedServer_ All Local Addresses 7001 N/A
3 new_ManagedServer_ All Local Addresses 7001 N/A
Exit
Help
Previous
Next

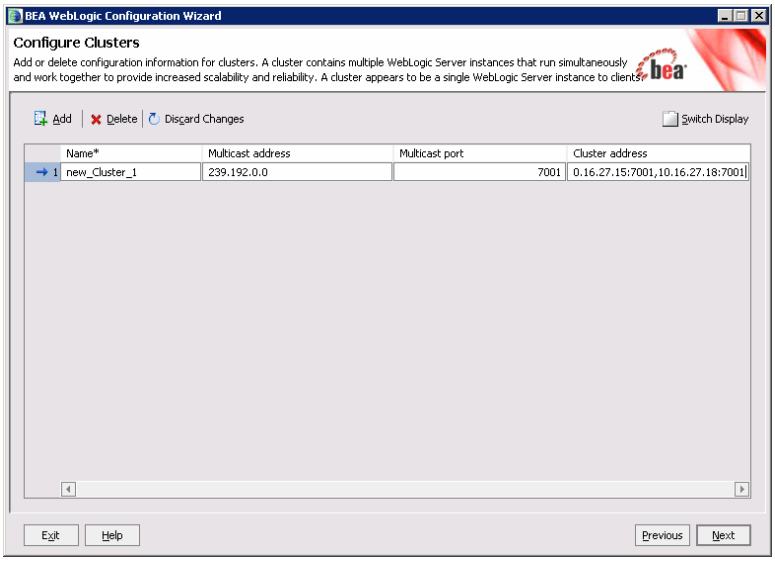
We created 3 managed servers (one on the admin server BEAVM1 and two more on BEAVM2 and BEAVM3).

Note that the “Listen port” for managed_server1 is 8001 as Admin server uses 7001 on BEAVM1.

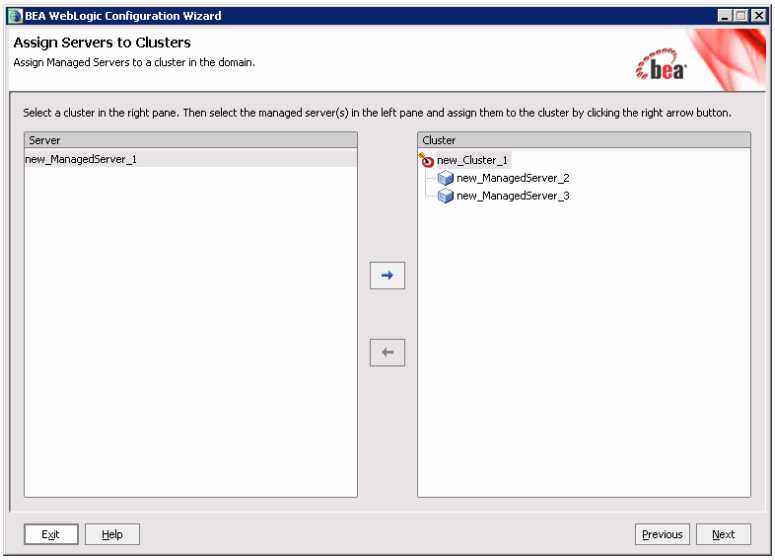
Click “Next”.


BEA WebLogic Configuration Wizard
Configure Clusters
Add or delete configuration information for clusters. A cluster contains multiple WebLogic Server instances that run simultaneously and work together to provide increased scalability and reliability. A cluster appears to be a single WebLogic Server instance to clients.
Add
Delete
Discard Changes
Switch Display
Name*
Multicast address
Multicast port
Cluster address
Exit
Help
Previous
Next

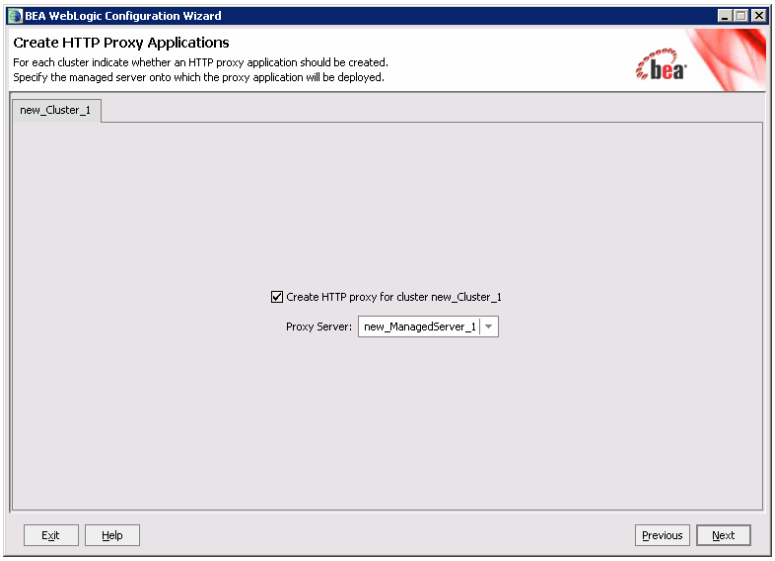
Click “Add” to create a new cluster.



We added (the IP address of) BEAVM2 and BEAVM3 (<BEAVM2IP>:7001, <BEAVM3IP>: 7001) to be part of cluster “new_Cluster_1”.’s cluster address.

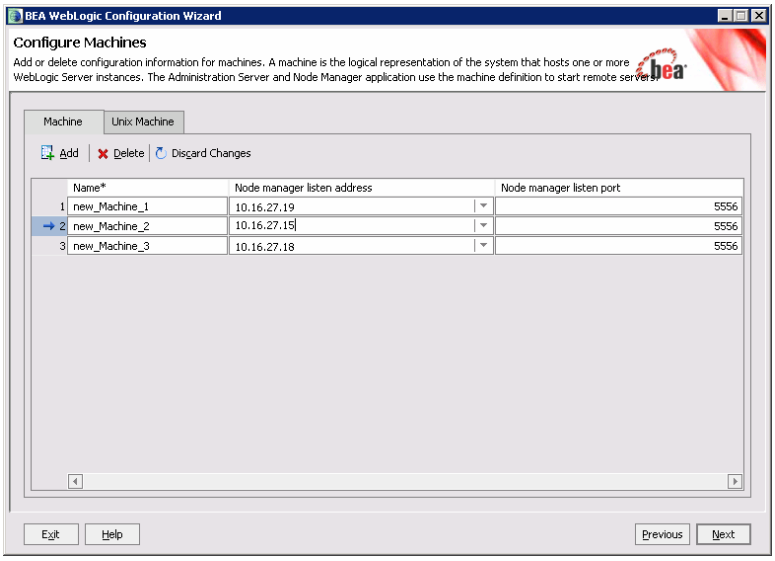


We picked “new_ManagedServer_2” and “new_ManagedServer_3” to be part of the cluster.

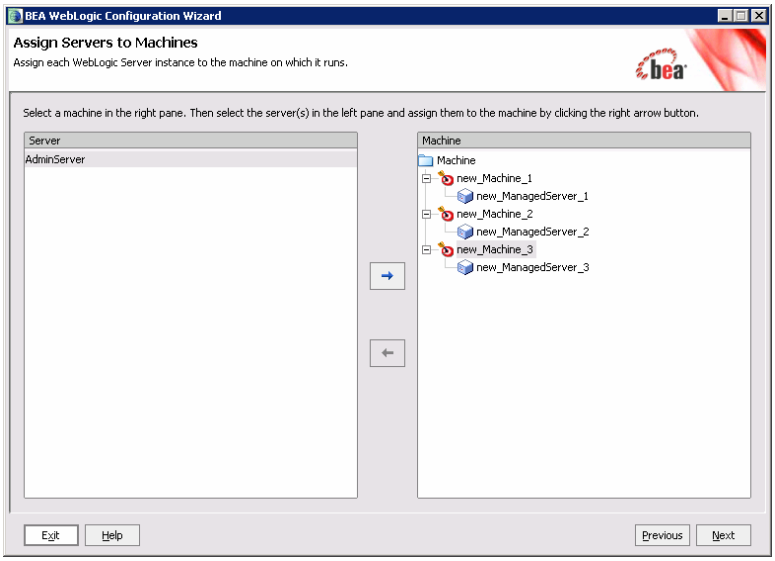


We picked new_managed_server_1(on BEAVM1) to be the HTTP proxy for the cluster.

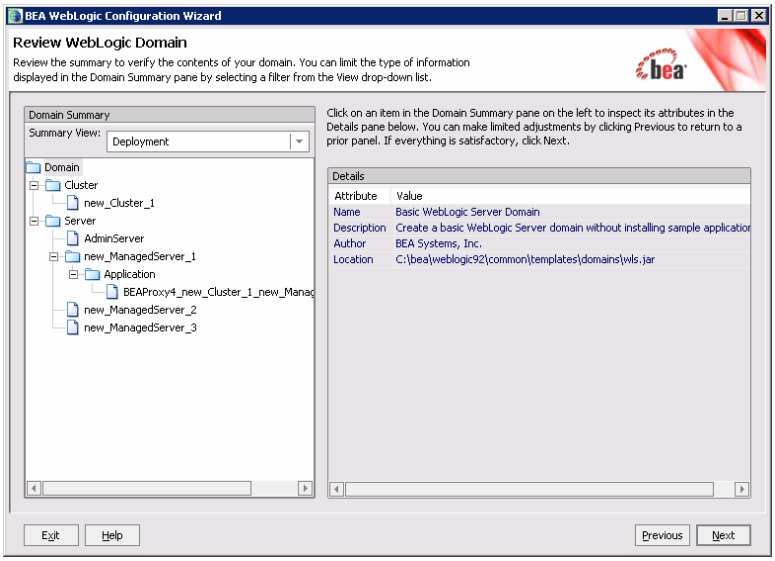
This proxy server would receive requests from the clients and forward to the managed servers in the cluster. We configured the proxy server to be on the same box as the admin server. However, you could have them on separate VMs or systems.


BEA WebLogic Configuration Wizard
Configure Machines
Add or delete configuration information for machines. A machine is the logical representation of the system that hosts one or more WebLogic Server instances. The Administration Server and Node Manager application use the machine definition to start remote servers.
Machine
Unix Machine
Add
Delete
Discard Changes
Name*
Node manager listen address
Node manager listen port
1 new_Machine_1 10.16.27.19 5556
2 new_Machine_2 10.16.27.15 5556
3 new_Machine_3 10.16.27.18 5556
Exit
Help
Previous
Next

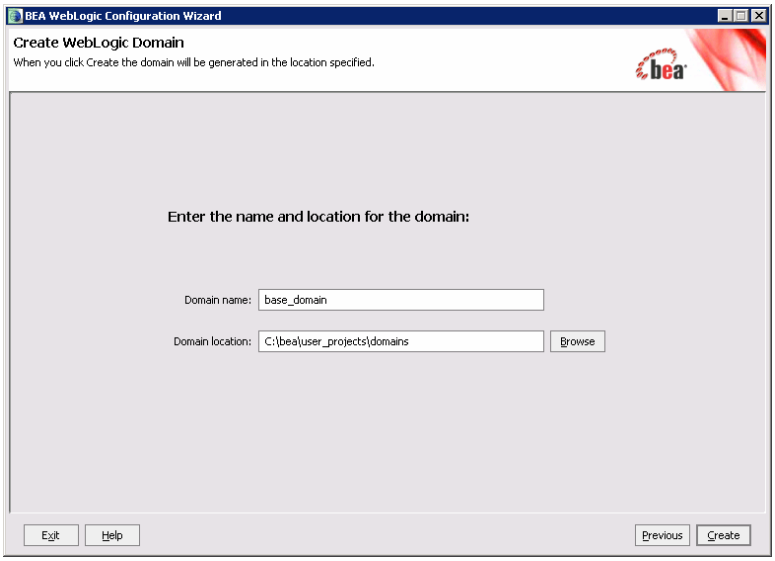
Click “Add” to add the node manager machine addresses (BEAVM1, BEAVM2 and BEAVM3).



Assign the managed servers to the respective virtual machines.


BEA WebLogic Configuration Wizard
Review WebLogic Domain
Review the summary to verify the contents of your domain. You can limit the type of information displayed in the Domain Summary pane by selecting a filter from the View drop-down list.
Domain Summary
Summary View:
Deployment
Domain
Cluster
new_Cluster_1
Server
AdminServer
new_ManagedServer_1
Application
new_ManagedServer_2
new_ManagedServer_3
Click on an item in the Domain Summary pane on the left to inspect its attributes in the Details pane below. You can make limited adjustments by clicking Previous to return to a prior panel. If everything is satisfactory, click Next.
Details
Attribute
Value
Name
Basic WebLogic Server Domain
Description
Create a basic WebLogic Server domain without installing sample applicatio
Author
BEA Systems, Inc.
Location
C:\bea\weblogic92\common\templates\domains\wls.jar
Exit
Help
Previous
Next

Review the information and click “next”.



Enter the “domain name” and “domain location”.

We used

domain name: base_domain
domain location: c:\bea\user_projects\domains

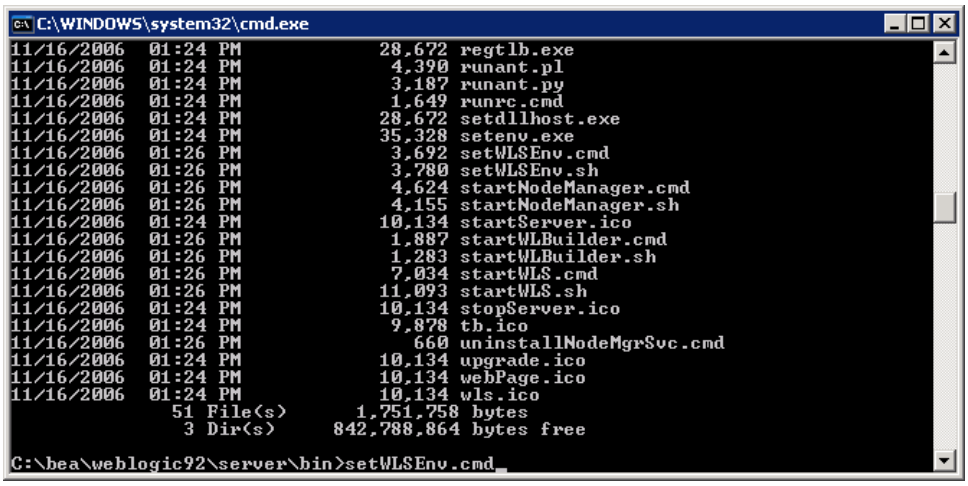
Click “create” to create the domain.

Click “done” once the domain creation is complete.

6.2 Packaging the BEA domain environment

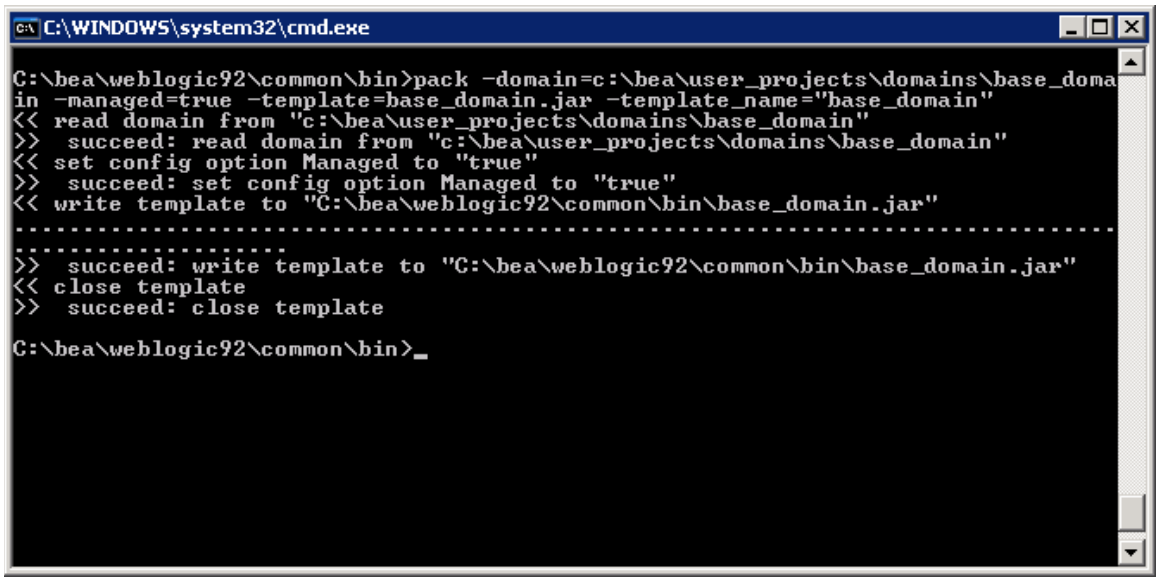
Packing and unpacking can be used to quickly create domain directory structures from the admin server (BEAVM1) on managed servers (BEAVM2 & BEAVM3) that would be part of this domain.

Run the following command before packaging. Under <BEA HOME>/Weblogic92/server/bin, run WLSEnv.cmd to initialize the Windows shell’s environment.



Run the “pack” command from c:\bea\weblogic92\common\bin as follows:

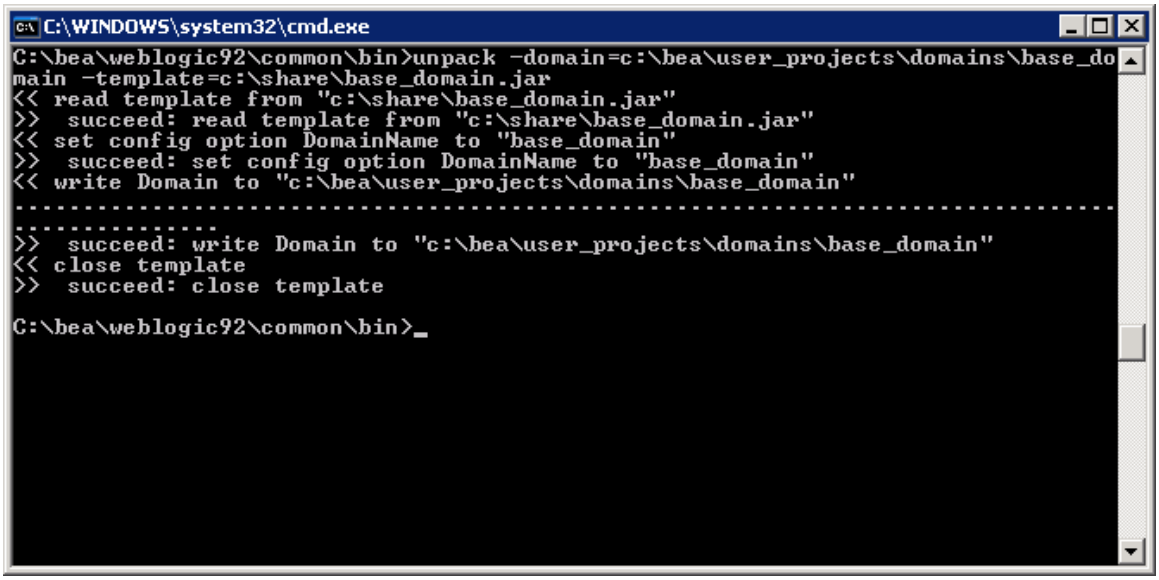
Pack –domain=c:\bea\user_projects\domains\base_domain –managed=true
-template=base_domain.jar –template_name=”base_domain”



“Pack” creates a package file called base_domain.jar which needs to be transferred to the other VMs (shared or ftp’ed) BEAVM2 and BEAVM3 to unpack.

Now, Run “unpack” command from c:\bea\weblogic92\commin\bin on the other 2 VMs

Unpack –domain=c:\bea\user_projects\domains\base_domain -template=c:\share\base_domain.jar

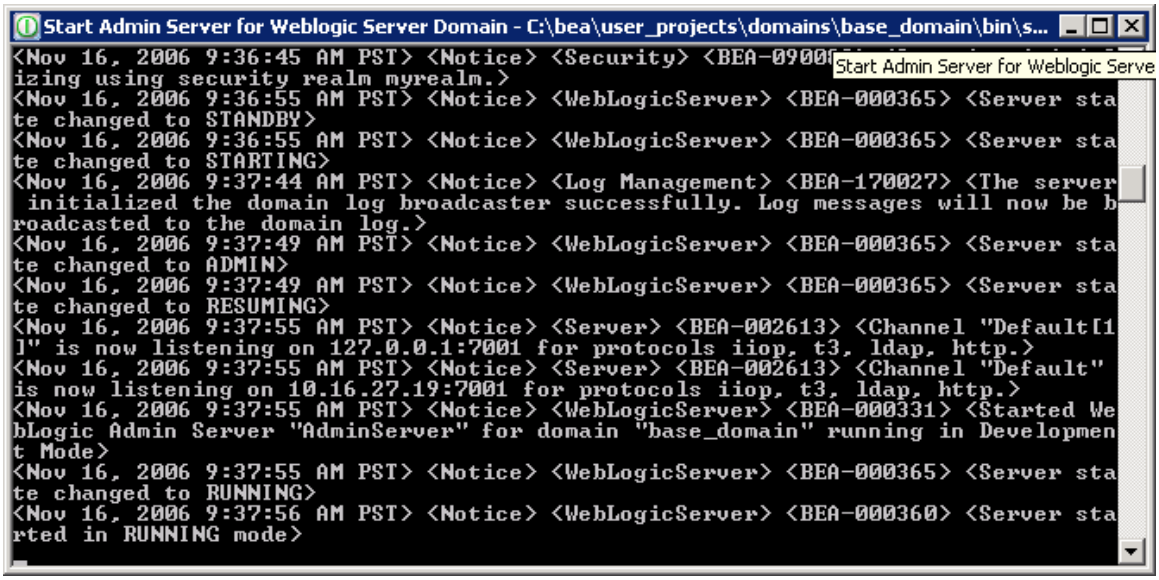


Make sure you specify the correct domain directory (c:\bea\user_projects\domains\base_domain)

6.3 Configuring and Starting the BEA Domain Environment

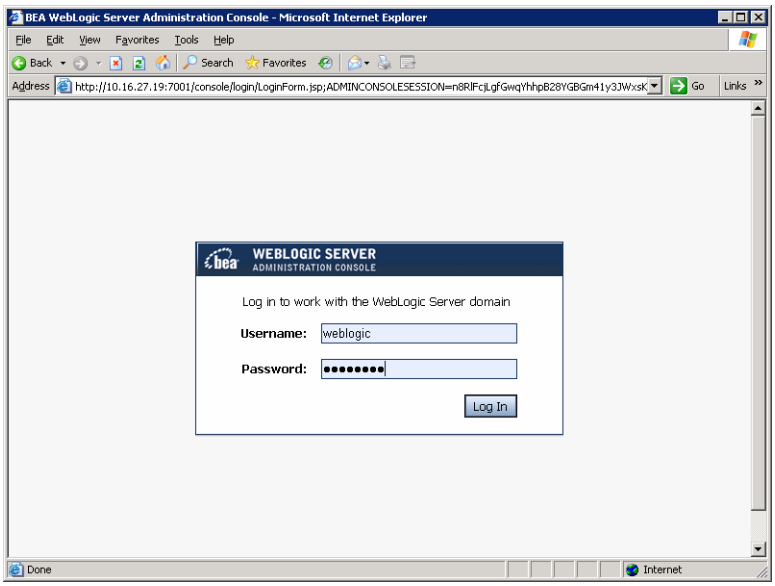
BEAVM1 is our admin server.

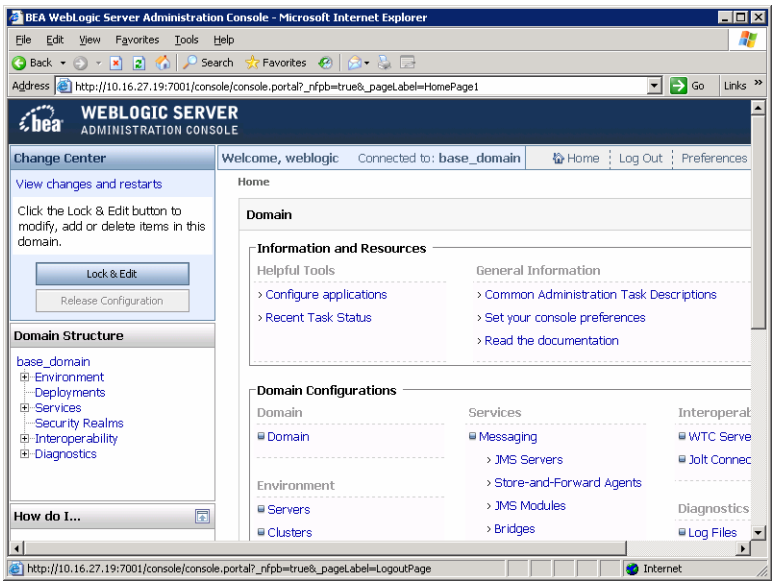
On BEAVM1, go to BEA products → user projects → <domain> → start WebLogic Admin server for domain



Now, start the admin console,

From browser, http://<<adminserverIP/hostname>>:7001/console





6.3.1 Configuring security (host verification) prior to server startup

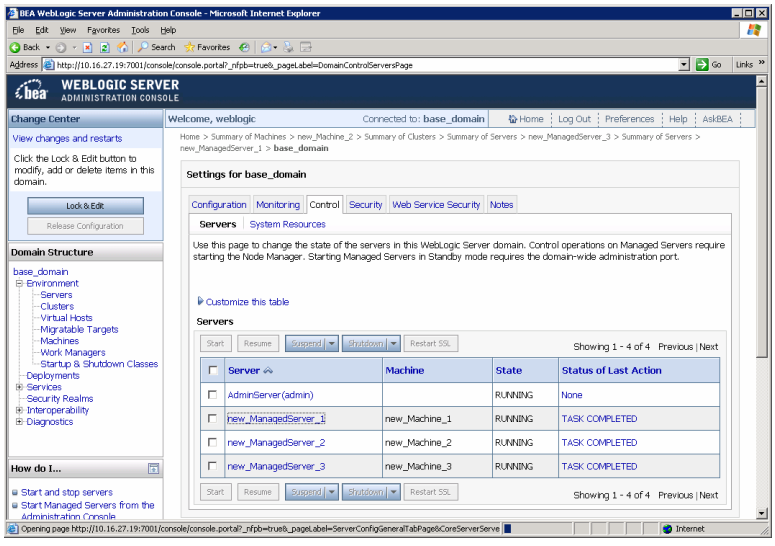
On the browser,

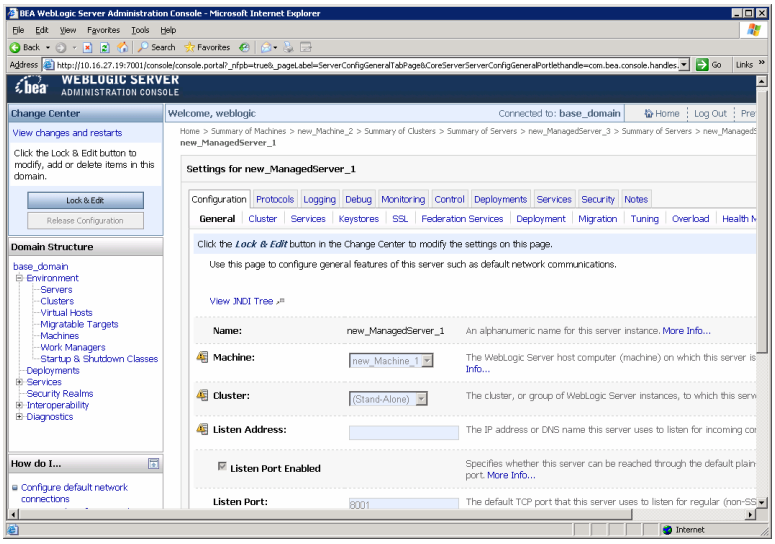
Go to environment → servers

Select one of the servers (new_Managed_Server_1)

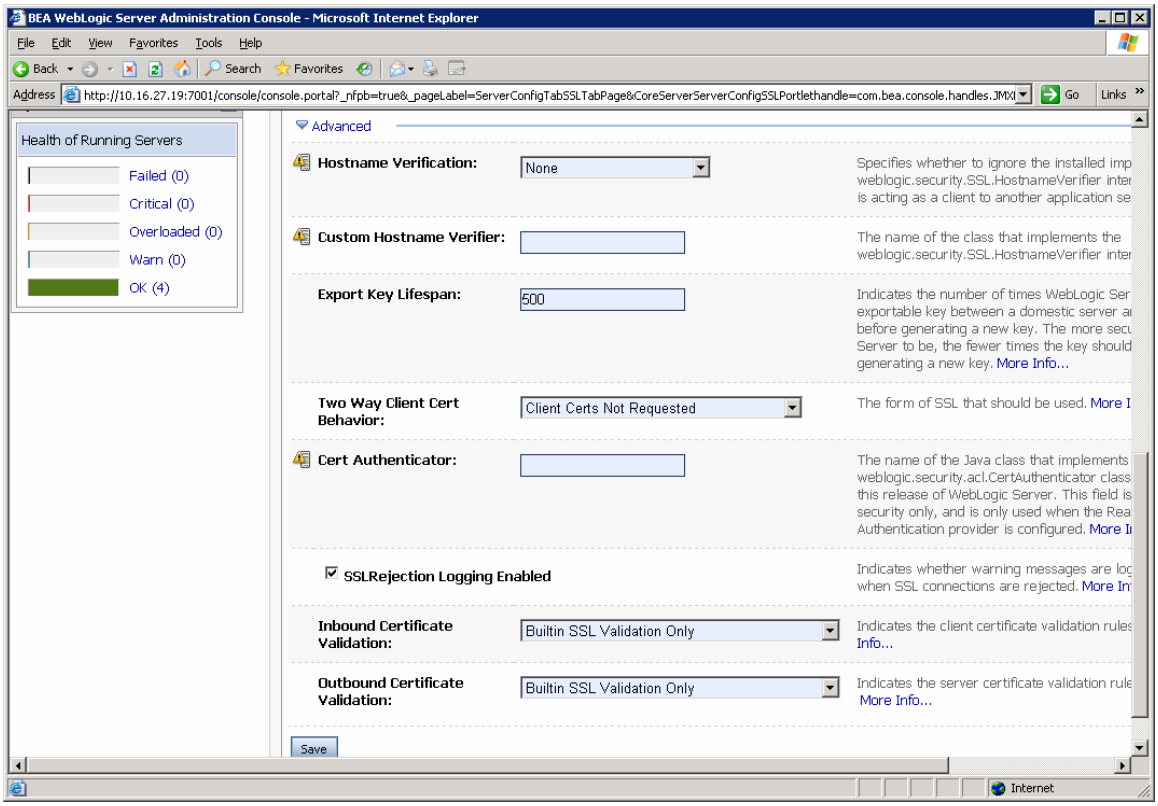
Select “SSL” tab.

Click “advanced” at the bottom of page.





Click on “lock & edit”.


BEA WebLogic Server Administration Console - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://10.16.27.19:7001/console/console.portal?_nfpb=true&_pageLabel=ServerConfigTabSSLTabPage&CoreServerServerConfigSSLPortlethandle=com.bea.console.handles.JMXI
Go
Links
Health of Running Servers
Failed (0)
Critical (0)
Overloaded (0)
Warn (0)
OK (4)
Advanced
Hostname Verification:
None
Specifies whether to ignore the installed imp
weblogic.security.SSL.HostnameVerifier inter
is acting as a client to another application se
Custom Hostname Verifier:
The name of the class that implements the
weblogic.security.SSL.HostnameVerifier inter
Export Key Lifespan:
500
Indicates the number of times WebLogic Ser
exportable key between a domestic server a
before generating a new key. The more secu
Server to be, the fewer times the key should
generating a new key. More Info...
Two Way Client Cert Behavior:
Client Certs Not Requested
The form of SSL that should be used. More I
Cert Authenticator:
The name of the Java class that implements
weblogic.security.acl.CertAuthenticator class
this release of WebLogic Server. This field is
security only, and is only used when the Rea
Authentication provider is configured. More I
SSLRejection Logging Enabled
Indicates whether warning messages are log
when SSL connections are rejected. More In
Inbound Certificate Validation:
Builtin SSL Validation Only
Indicates the client certificate validation rules
Info...
Outbound Certificate Validation:
Builtin SSL Validation Only
Indicates the server certificate validation rule
More Info...
Save
Internet

Select “none” against hostname verification. This will disable hostname verification for SSL certificates. If you do not perform this action, you will encounter a “hostname verification error” while the admin server communicates with the node managers.

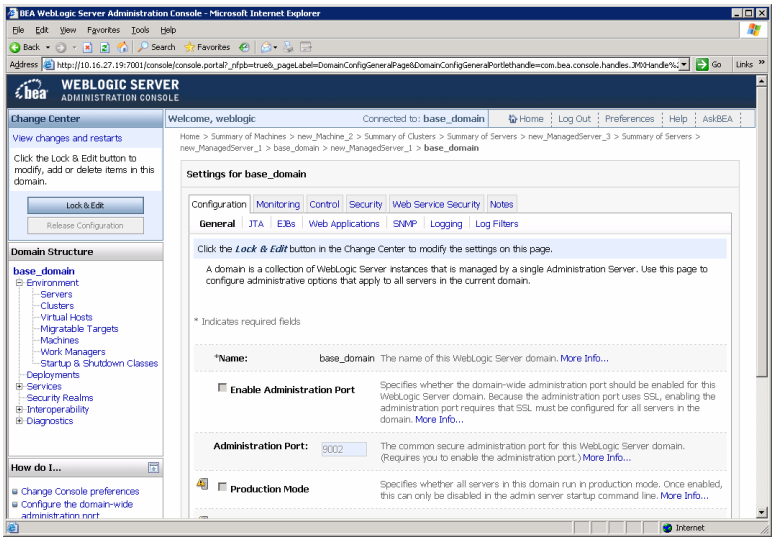
Note: For production environments, you will have to generate SSL certificates for each BEA WLS VM after the configuration of the WLS servers and to enable the host name verification to prevent man-in-the-middle attack.

Click “Save” and press “activate changes” at the top.

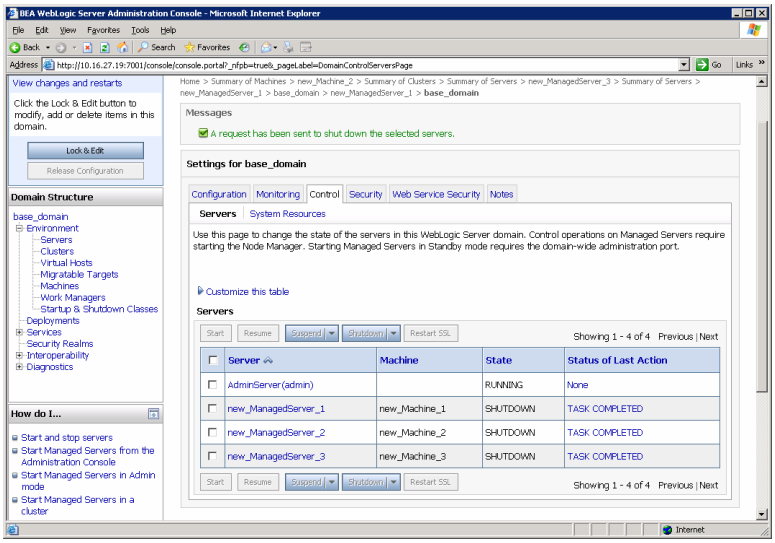
Repeat this step for the admin server and the rest of the managed servers.

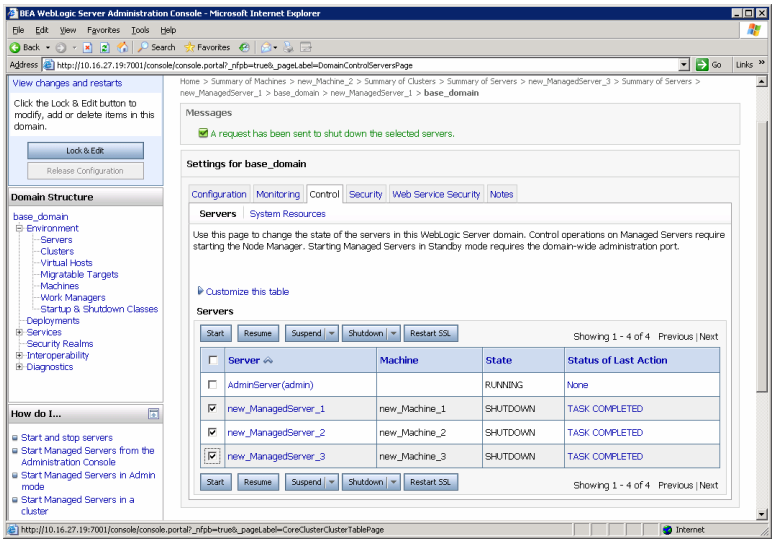
6.3.2 Starting the BEA WebLogic Application Servers

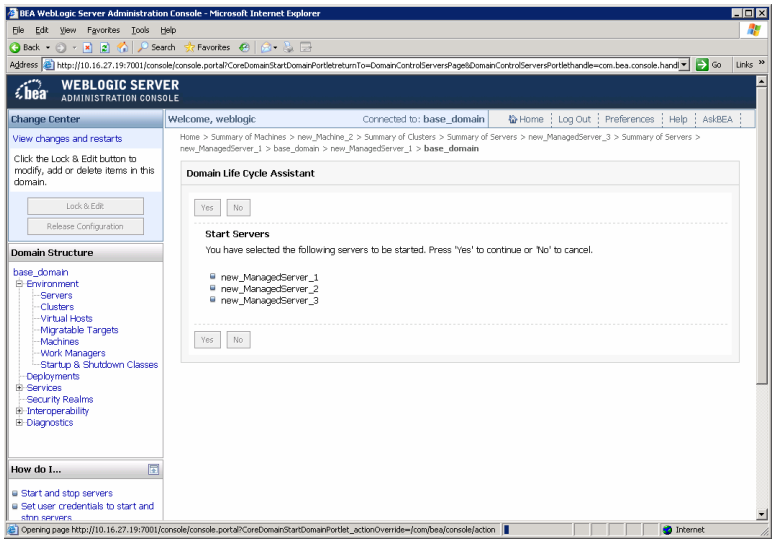
Go to base_domain → "control" tab



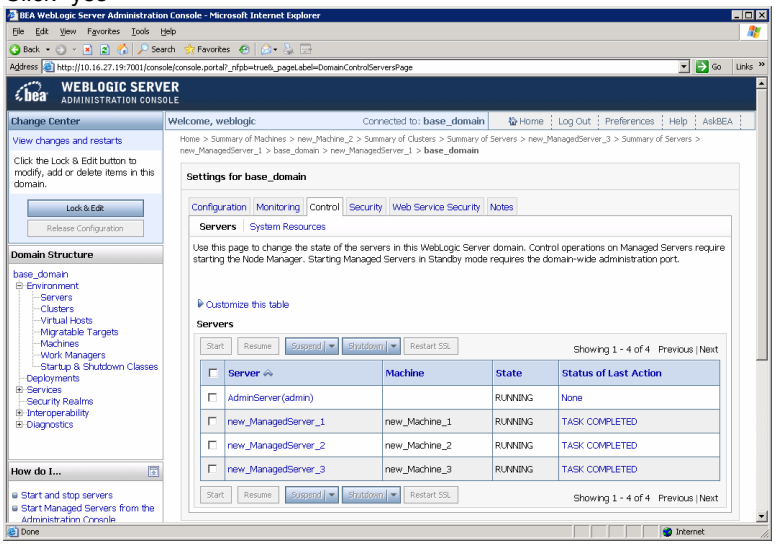
Select all the servers and press "start"







Click “yes”



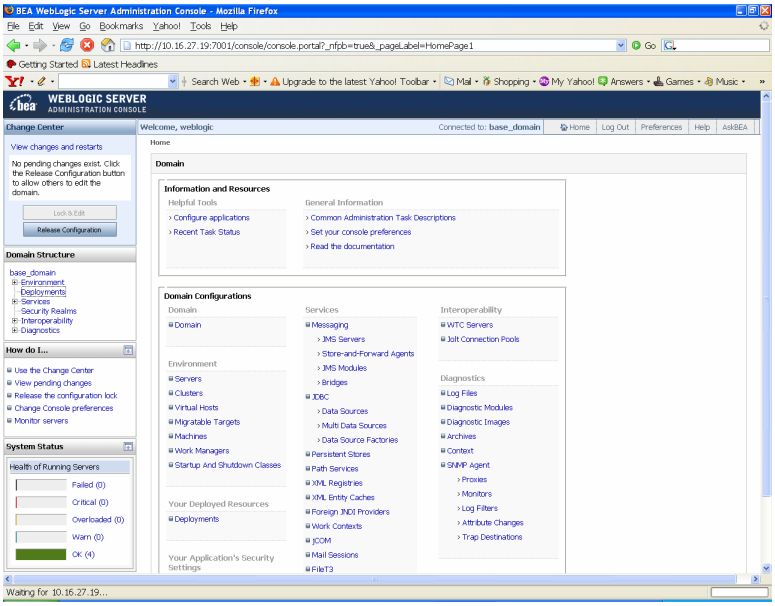
This will start all the managed servers in the BEA WebLogic domain.

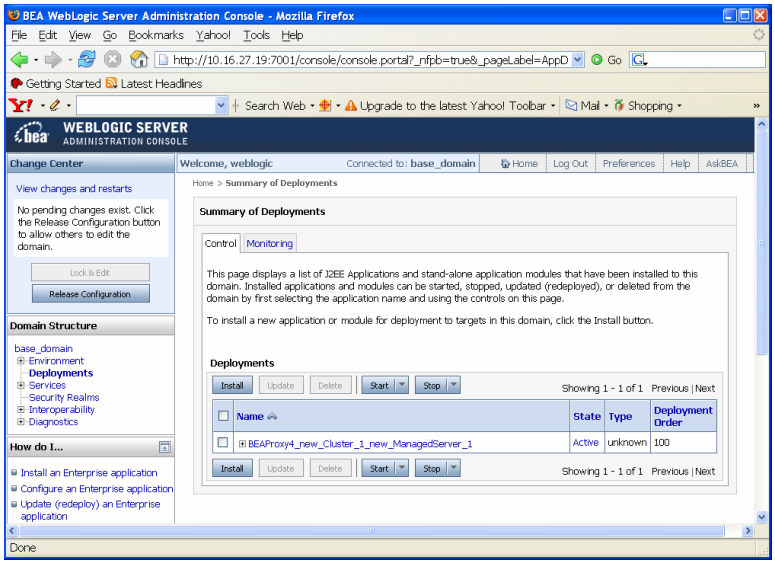
6.4 Installing Applications on the WLS environment

Login to admin server through the browser

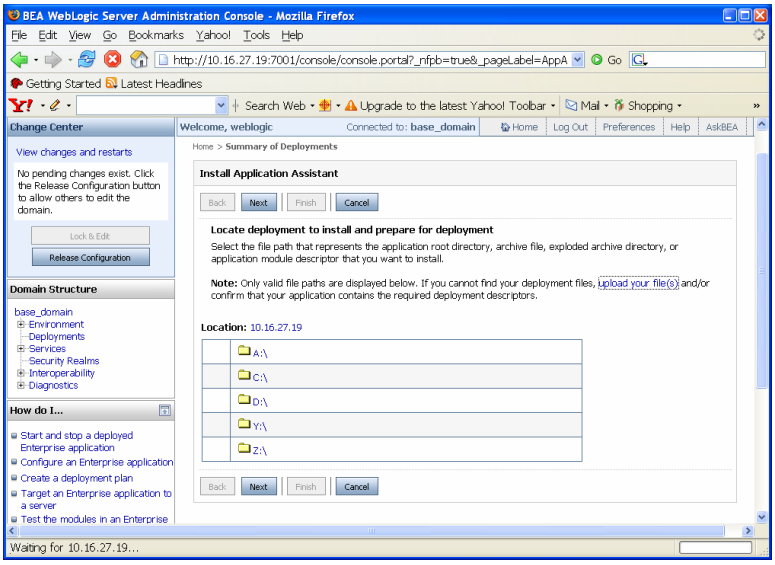
Click “lock & edit”.

Go to <domain> → deployments.

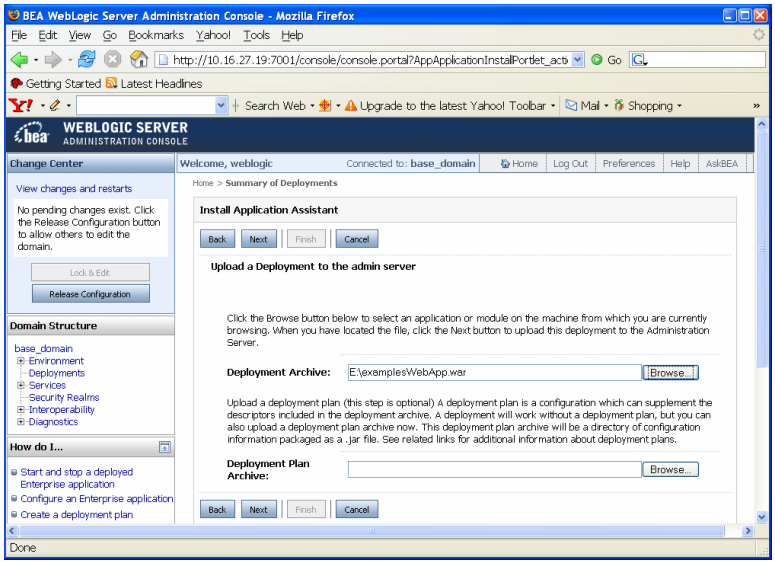




Click “install”

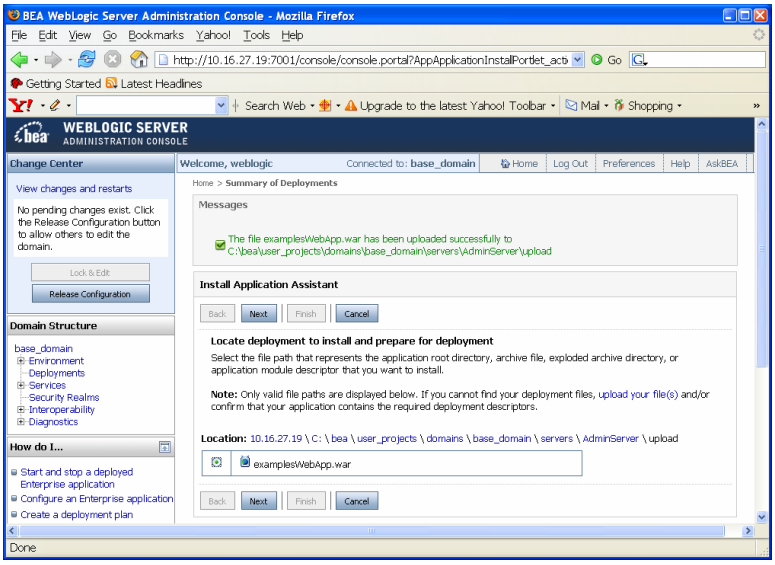


Click “upload your file(s)”

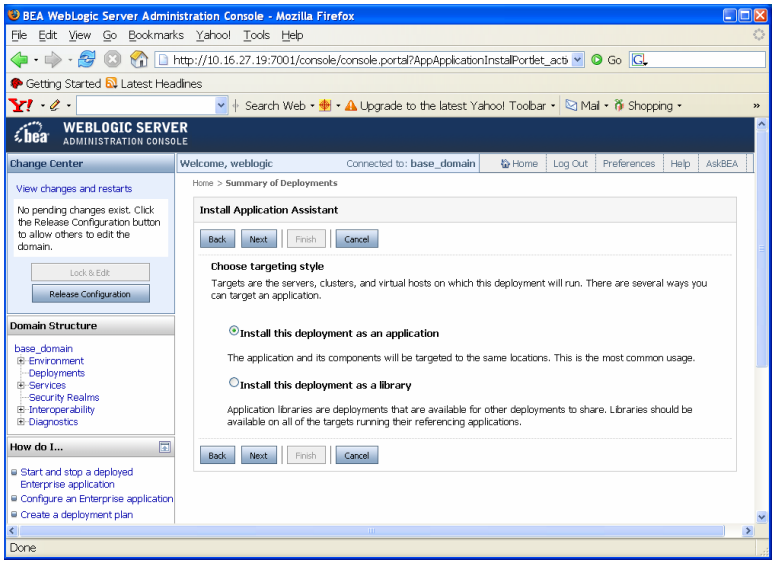


Provide the application file name (*.war) (we used a sample application called ExamplesWebApp.war)

Click “next”


BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
View changes and restarts
No pending changes exist. Click the Release Configuration button to allow others to edit the domain.
Lock & Edit
Release Configuration
Domain Structure
base_domain
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
Start and stop a deployed Enterprise application
Configure an Enterprise application
Create a deployment plan
Welcome, weblogic
Connected to: base_domain
Home
Log Out
Preferences
Help
AskBEA
Home > Summary of Deployments
Messages
The file examplesWebApp.war has been uploaded successfully to C:\bea\user_projects\domains\base_domain\servers\AdminServer\upload
Install Application Assistant
Back
Next
Finish
Cancel
Locate deployment to install and prepare for deployment
Select the file path that represents the application root directory, archive file, exploded archive directory, or application module descriptor that you want to install.
Note: Only valid file paths are displayed below. If you cannot find your deployment files, upload your file(s) and/or confirm that your application contains the required deployment descriptors.
Location: 10.16.27.19 \ C: \ bea \ user_projects \ domains \ base_domain \ servers \ AdminServer \ upload
examplesWebApp.war
Done

Select “file” and click “next”


BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
View changes and restarts
No pending changes exist. Click the Release Configuration button to allow others to edit the domain.
Lock & Edit
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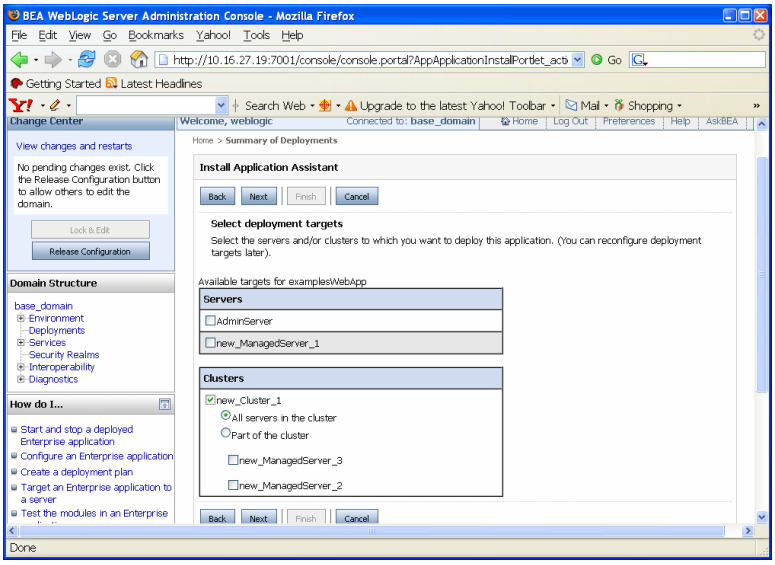
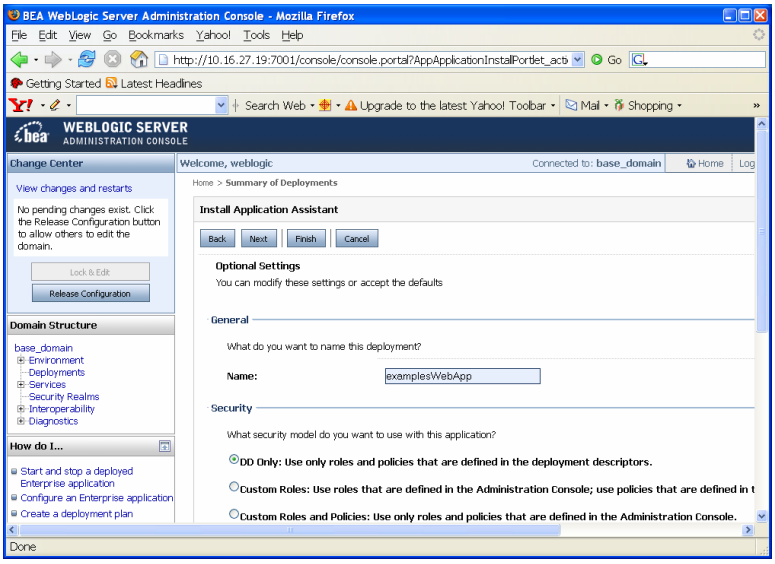
How do I...
Start and stop a deployed Enterprise application
Configure an Enterprise application
Create a deployment plan
Welcome, weblogic
Connected to: base_domain
Home
Log Out
Preferences
Help
AskBEA
Home > Summary of Deployments
Install Application Assistant
Back
Next
Finish
Cancel
Choose targeting style
Targets are the servers, clusters, and virtual hosts on which this deployment will run. There are several ways you can target an application.
Install this deployment as an application
The application and its components will be targeted to the same locations. This is the most common usage.
Install this deployment as a library
Application libraries are deployments that are available for other deployments to share. Libraries should be available on all of the targets running their referencing applications.
Done

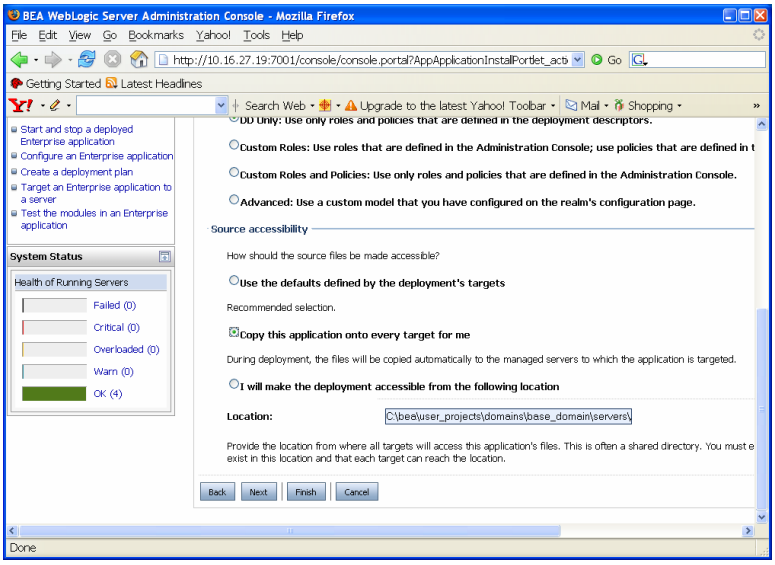
Select “install deployment as an application”



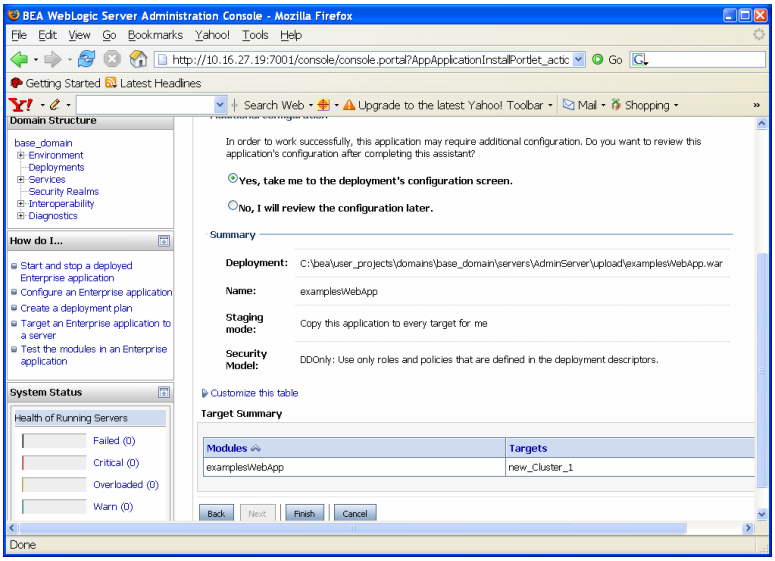
Select “new_Cluster_1” (cluster name). This will install the application across the managed servers (BEAVM2, BEAVM3) in the cluster new_Cluster_1.


BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
View changes and restarts
No pending changes exist. Click the Release Configuration button to allow others to edit the domain.
Lock & Edit
Release Configuration
Domain Structure
base_domain
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
Start and stop a deployed Enterprise application
Configure an Enterprise application
Create a deployment plan
Welcome, weblogic
Connected to: base_domain
Home > Summary of Deployments
Install Application Assistant
Back
Next
Finish
Cancel
Optional Settings
You can modify these settings or accept the defaults
General
What do you want to name this deployment?
Name:
examplesWebApp
Security
What security model do you want to use with this application?
DD Only: Use only roles and policies that are defined in the deployment descriptors.
Custom Roles: Use roles that are defined in the Administration Console; use policies that are defined in t
Custom Roles and Policies: Use only roles and policies that are defined in the Administration Console.
Done

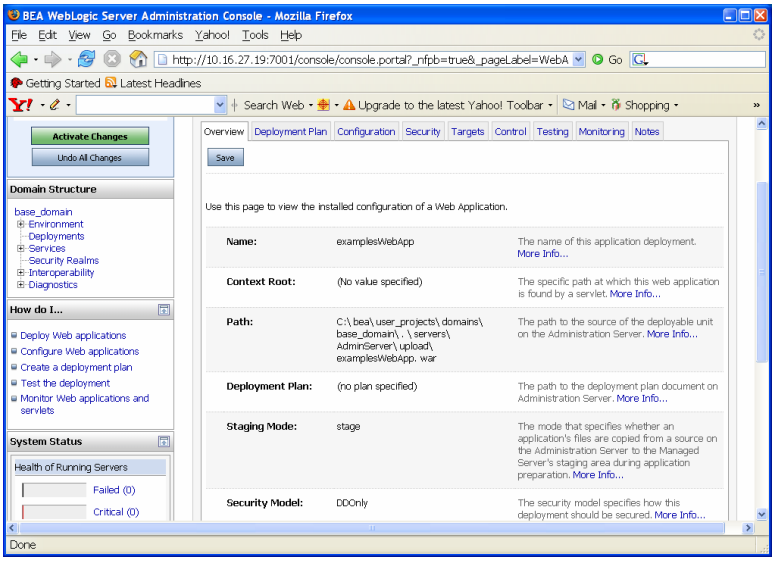
Select your optional security settings. We selected default values.


BEA WebLogic Server Administration Console - Mozilla Firefox
Custom Roles: Use roles that are defined in the Administration Console; use policies that are defined in t
Custom Roles and Policies: Use only roles and policies that are defined in the Administration Console.
Advanced: Use a custom model that you have configured on the realm's configuration page.
Source accessibility
How should the source files be made accessible?
Use the defaults defined by the deployment's targets
Recommended selection.
Copy this application onto every target for me
During deployment, the files will be copied automatically to the managed servers to which the application is targeted.
I will make the deployment accessible from the following location
Location:
C:\bea\user_projects\domains\base_domain\servers\
Provide the location from where all targets will access this application's files. This is often a shared directory. You must e
exist in this location and that each target can reach the location.
Back
Next
Finish
Cancel
Done

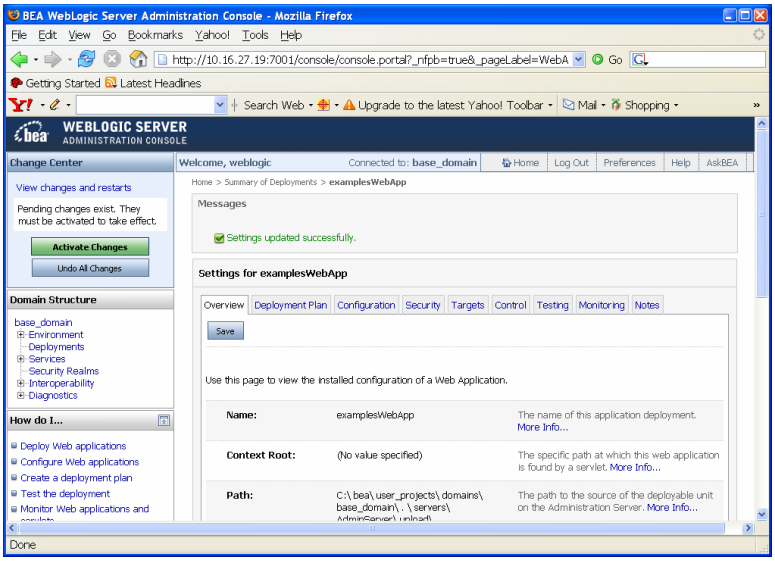
Click “next”



Click “finish”

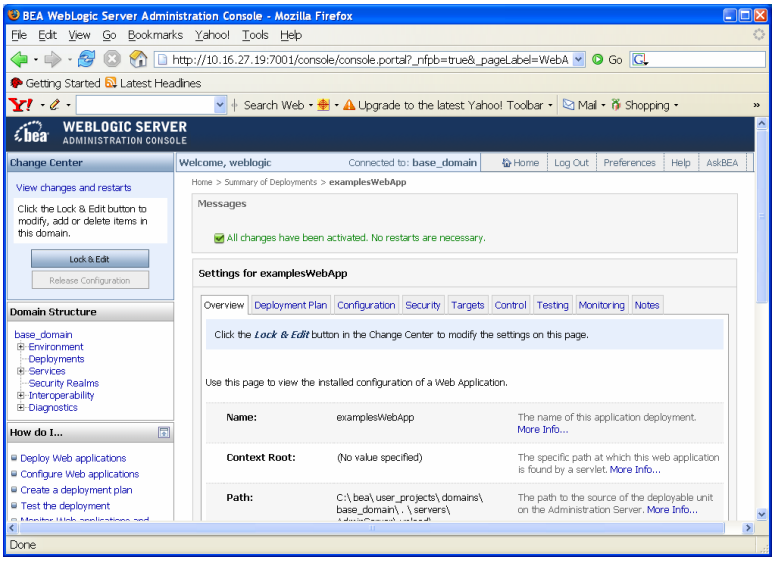

BEA WebLogic Server Administration Console - Mozilla Firefox
File Edit View Go Bookmarks Yahoo! Tools Help
http://10.16.27.19:7001/console/console.portal?_nfpb=true&_pageLabel=WebA
Getting Started Latest Headlines
Search Web Upgrade to the latest Yahoo! Toolbar Mail Shopping
Activate Changes
Undo All Changes
Domain Structure
base_domain
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
Deploy Web applications
Configure Web applications
Create a deployment plan
Test the deployment
Monitor Web applications and servlets
System Status
Health of Running Servers
Failed (0)
Critical (0)
Overview Deployment Plan Configuration Security Targets Control Testing Monitoring Notes
Save
Use this page to view the installed configuration of a Web Application.
Name: examplesWebApp
The name of this application deployment. More Info...
Context Root: (No value specified)
The specific path at which this web application is found by a servlet. More Info...
Path: C:\bea\user_projects\domains\base_domain\.\servers\AdminServer\upload\examplesWebApp.war
The path to the source of the deployable unit on the Administration Server. More Info...
Deployment Plan: (no plan specified)
The path to the deployment plan document on Administration Server. More Info...
Staging Mode: stage
The mode that specifies whether an application's files are copied from a source on the Administration Server to the Managed Server's staging area during application preparation. More Info...
Security Model: DDOnly
The security model specifies how this deployment should be secured. More Info...
Done

Click “save”.

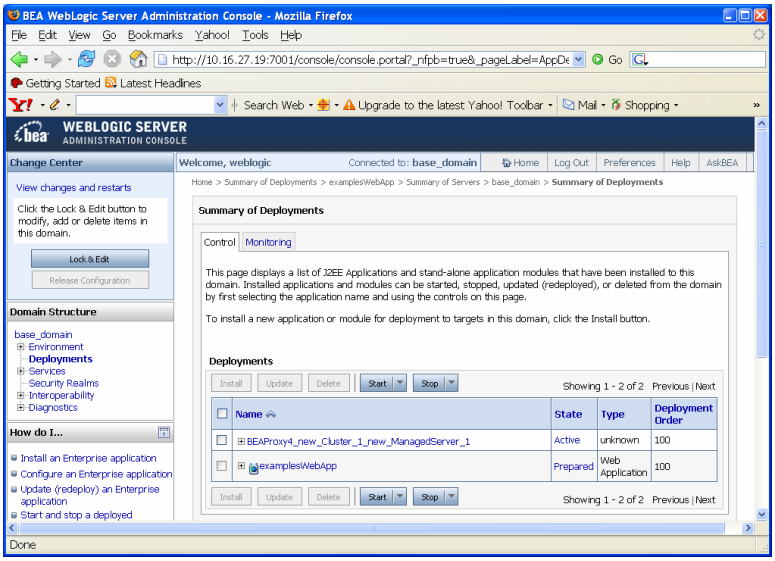

BEA WebLogic Server Administration Console - Mozilla Firefox
File Edit View Go Bookmarks Yahoo! Tools Help
http://10.16.27.19:7001/console/console.portal?_nfpb=true&_pageLabel=WebA
Getting Started Latest Headlines
Search Web Upgrade to the latest Yahoo! Toolbar Mail Shopping
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
View changes and restarts
Pending changes exist. They must be activated to take effect.
Activate Changes
Undo All Changes
Welcome, weblogic
Connected to: base_domain
Home Log Out Preferences Help AskBEA
Home > Summary of Deployments > examplesWebApp
Messages
Settings updated successfully.
Settings for examplesWebApp
Domain Structure
base_domain
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
Deploy Web applications
Configure Web applications
Create a deployment plan
Test the deployment
Monitor Web applications and
Overview Deployment Plan Configuration Security Targets Control Testing Monitoring Notes
Save
Use this page to view the installed configuration of a Web Application.
Name: examplesWebApp
The name of this application deployment. More Info...
Context Root: (No value specified)
The specific path at which this web application is found by a servlet. More Info...
Path: C:\bea\user_projects\domains\base_domain\.\servers\
The path to the source of the deployable unit on the Administration Server. More Info...
Done

Now click “activate changes”.

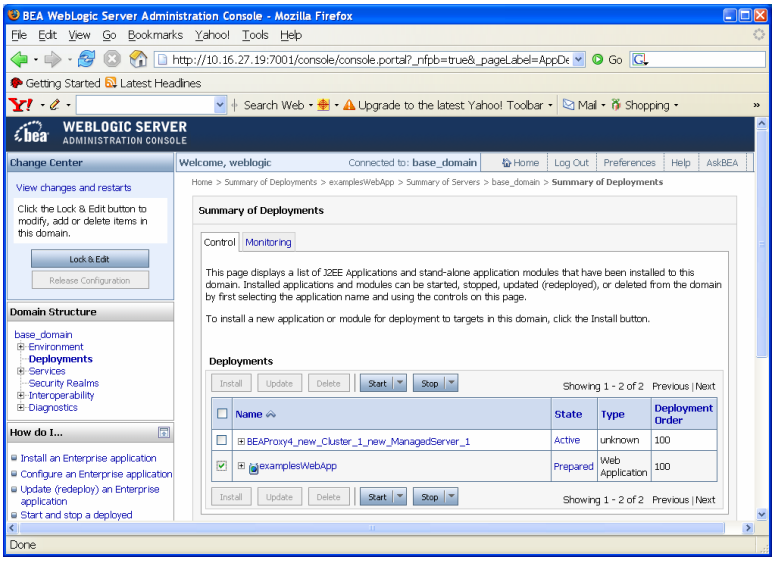
At this point, your application is installed and activated in the cluster.



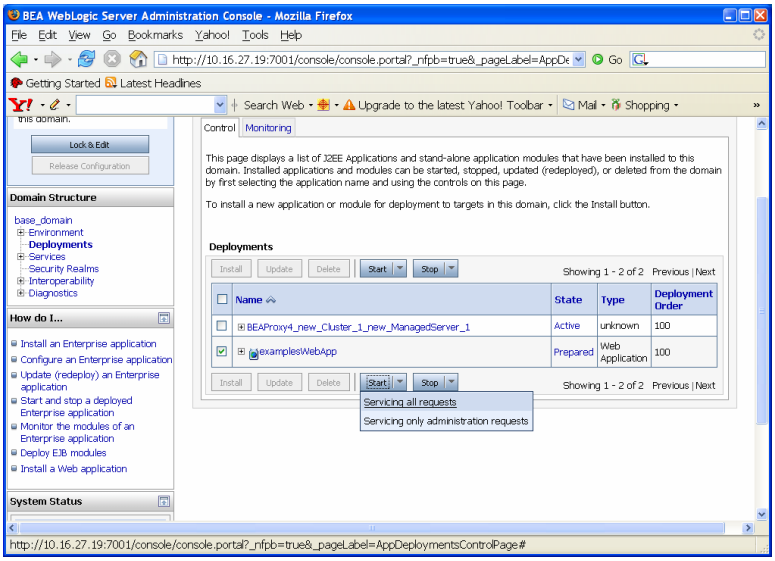
Go to Deployments.
You should see the newly installed application.

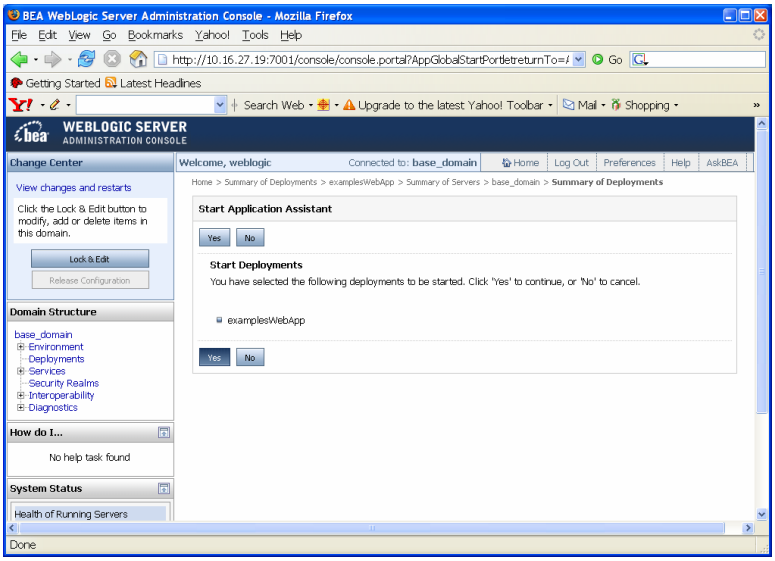

BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
Welcome, weblogic
Connected to: base_domain
Summary of Deployments
Control
Monitoring
This page displays a list of J2EE Applications and stand-alone application modules that have been installed to this domain. Installed applications and modules can be started, stopped, updated (redeployed), or deleted from the domain by first selecting the application name and using the controls on this page.
To install a new application or module for deployment to targets in this domain, click the Install button.
Deployments
Name
State
Type
Deployment Order
BEAProxy4_new_Cluster_1_new_ManagedServer_1
Active
unknown
100
examplesWebApp
Prepared
Web Application
100
Domain Structure
How do I...
Done

Choose the application (“exampleWebApp” in our case) and click “Start”

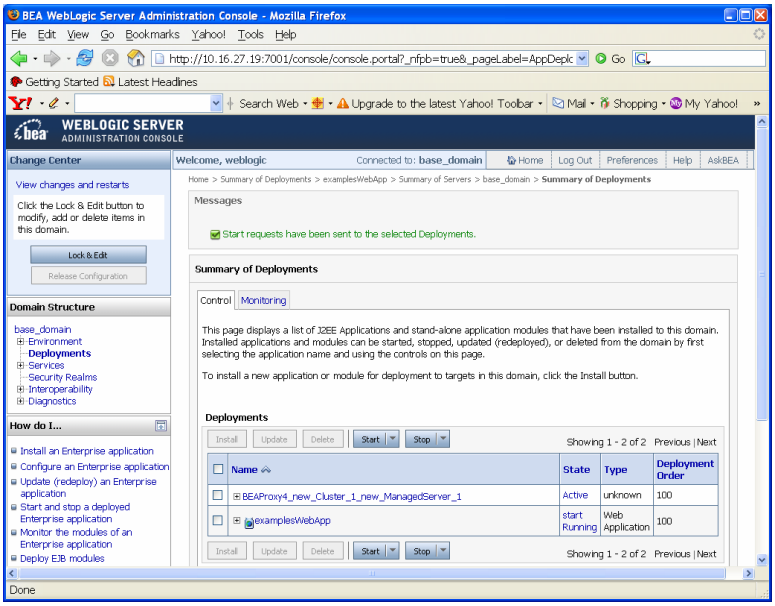


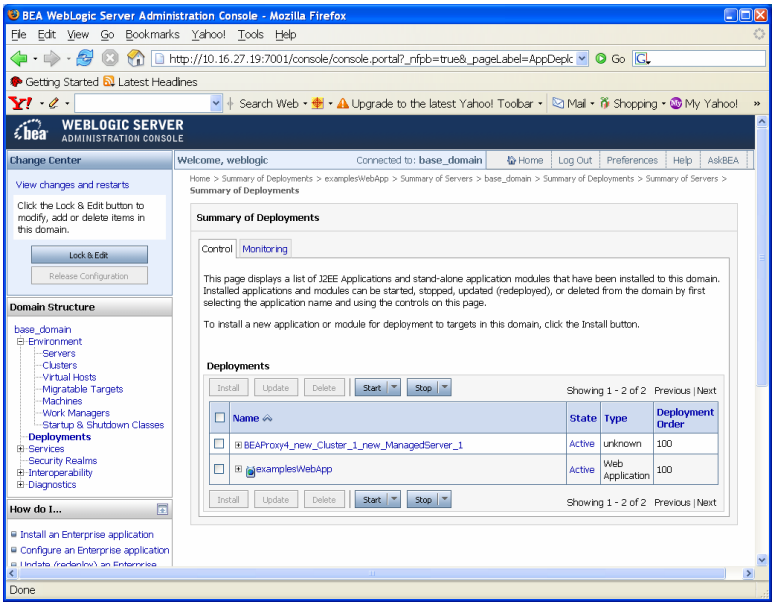
While choosing “Start”, please select “Serving all requests”


BEA WebLogic Server Administration Console - Mozilla Firefox
Servicing all requests
Servicing only administration requests
http://10.16.27.19:7001/console/console.portal?_nfpb=true&_pageLabel=AppDeploymentsControlPage#


BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
View changes and restarts
Click the Lock & Edit button to modify, add or delete items in this domain.
Lock & Edit
Release Configuration
Domain Structure
base_domain
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
No help task found
System Status
Health of Running Servers
Welcome, weblogic
Connected to: base_domain
Home
Log Out
Preferences
Help
AskBEA
Start Application Assistant
Yes
No
Start Deployments
You have selected the following deployments to be started. Click 'Yes' to continue, or 'No' to cancel.
examplesWebApp
Done

Click “Yes”


BEA WebLogic Server Administration Console - Mozilla Firefox
WEBLOGIC SERVER
ADMINISTRATION CONSOLE
Change Center
Domain Structure
How do I...
Install an Enterprise application
Configure an Enterprise application
Update (redeploy) an Enterprise application
Start and stop a deployed Enterprise application
Monitor the modules of an Enterprise application
Deploy EJB modules
Messages
Start requests have been sent to the selected Deployments.
Summary of Deployments
Control
Monitoring
This page displays a list of J2EE Applications and stand-alone application modules that have been installed to this domain.
Installed applications and modules can be started, stopped, updated (redeployed), or deleted from the domain by first selecting the application name and using the controls on this page.
To install a new application or module for deployment to targets in this domain, click the Install button.
Deployments
Name
State
Type
Deployment Order
BEAProxy4_new_Cluster_1_new_ManagedServer_1
Active
unknown
100
examplesWebApp
start Running
Web Application
100
Showing 1 - 2 of 2 Previous | Next
Done

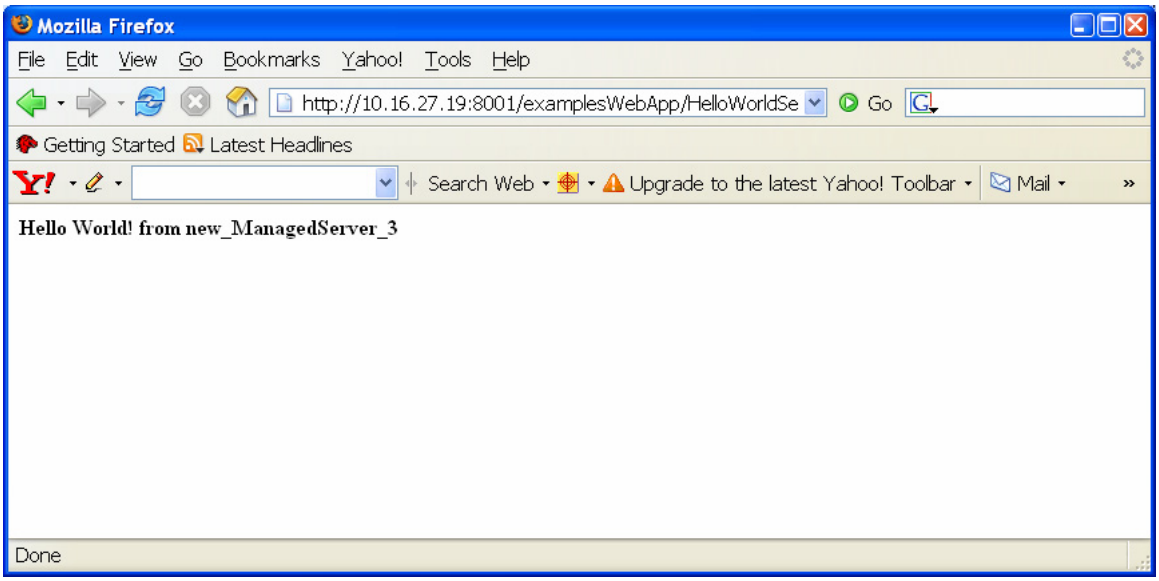


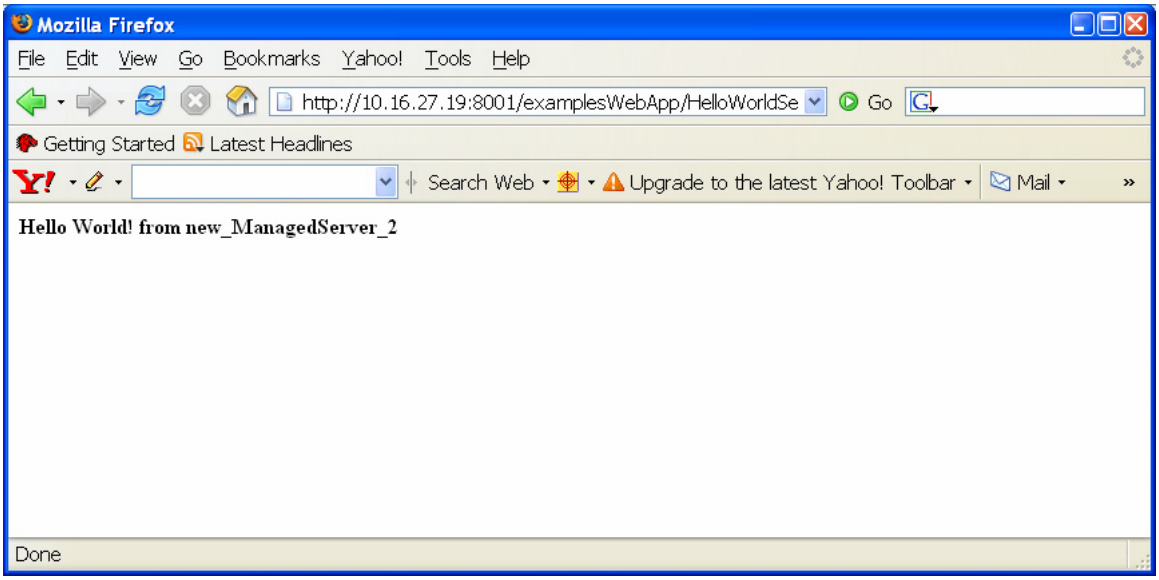
State of the application finally changes to “Active”.

The application is now deployed successfully in the cluster.

6.4.1 Testing the application

Go to browser and type in the application URL http://10.16.27.19:8001/examplesWebApp/HelloWorldServlet. You should see the application request being load balanced across the two managed servers in the cluster.





This validates the BEA domain environment and load balancing.

7.0 Upgrading BEA WebLogic Application Server Environments on Virtual Machines

There are 2 distinct VMware Infrastructure 3 features that can simplify the upgrade (or patching) of BEA WebLogic Application Server environments.

1. Snapshots: Create a snapshot prior to upgrade. If the upgrade or patching fails, you can revert back to snapshot instantly. This provides for quick problem resolution in case of challenges during patching or upgrades.
2. VM cloning: Clone the BEA WLS VM node(s) that needs to be upgraded and make sure to configure it on another virtual NIC network. Make sure this network is private or on a different network from the production environment. You can create the cloned VM on the same ESX Server host or on another ESX Server host and configure it to be on a separate network while retaining all the configurations deployed in production. This will ensure that the cloned VM and the original VM are not talking to each other. Now you can perform the upgrade in isolation and test it. While you are performing the upgrade, the production VMs are not impacted and continue to run. Once the upgrade is successful and tested, you can just enable this cloned VM to be the production BEA WLS node(s) and shutdown or delete the original VM.

We will look at the steps involved in using “Snapshots” or “VM cloning” to successfully upgrade our BEA domain.

For the purpose of demonstrating “Upgrade”, we installed 8.1 SP6 domain environment showcasing a similar configuration as our 9.2 setup (BEAVM1 as Admin Server, BEAVM2 and BEAVM3 as the managed servers on the 8.1 cluster) and used the same sample application to verify functionality before and after upgrade.

7.1 Snapshots in BEA WebLogic Server Virtual Machine Environment

A **snapshot** captures the entire state of the virtual machine at the time you take the snapshot. This includes the memory state, disk state and the VM settings. When you revert to a snapshot, you return all these items to the state they were in at the time you took that snapshot.

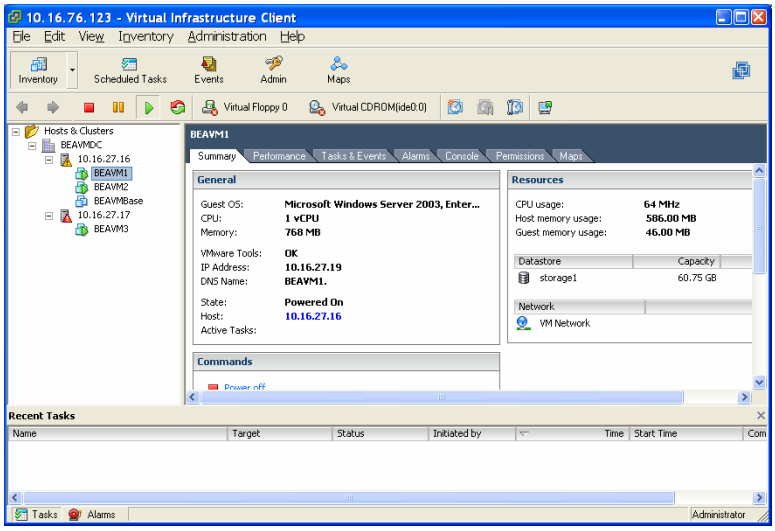
Snapshots are useful when you need to revert repeatedly to the same state but you don’t want to create multiple virtual machines. With snapshots, you create backup and restore positions in a linear process. Snapshots can be used as restoration points during a linear or iterative process, such as installing update packages, or during a branching process, such as installing and testing different versions of a program or patches. You can take a snapshot while a virtual machine is powered on, powered off, or suspended.

Snapshots can bring unique value to a BEA WebLogic environment. You can use snapshot for the following:

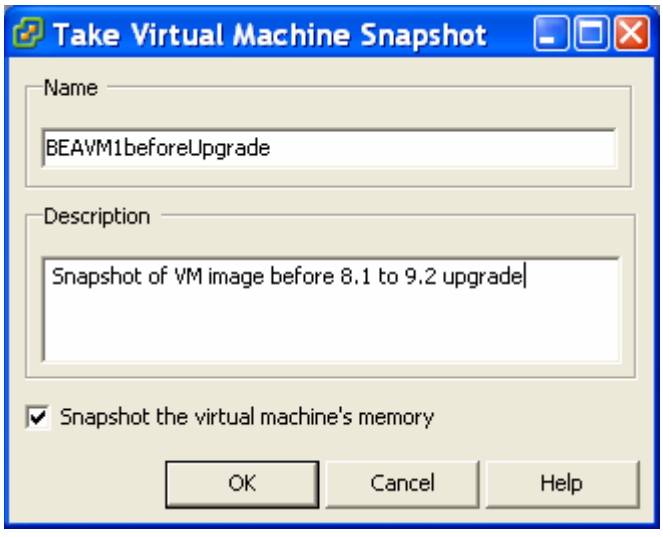
1. Create point in time copies for recovery from problems.
2. Use snapshots during upgrades and patching. If there are problems during change management processes, you can instantly revert back to the original image.
3. Snapshots can be useful during application failures to revert back to stable image of the application environment.

7.1.1 Taking a BEA WebLogic Server Virtual Machine Snapshot

Go to VirtualCenter, click on “BEAVM1” virtual machine.

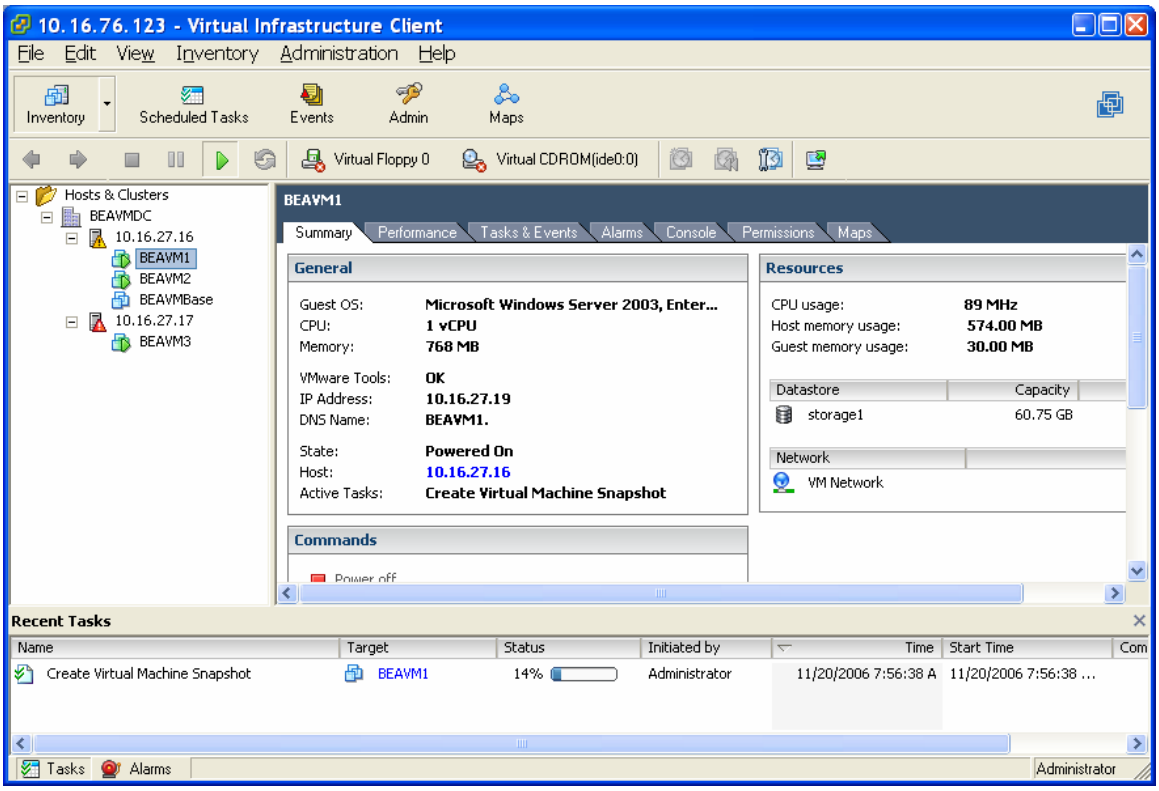


Right click on BEAVM1 → Snapshot → “take snapshot”.

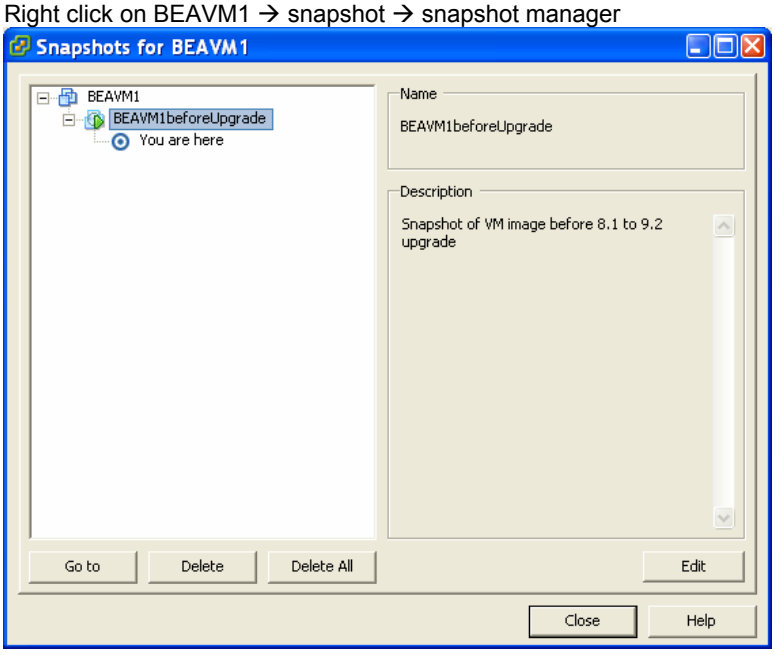


Enter the name for the snapshot that makes logical sense so that you can rollback to this BEA WebLogic system state when needed.

The “recent tasks” window shows the status of the snapshot.



Right click on BEAVM1 → snapshot → snapshot manager



This shows you the snapshots available for the VM.

Take a snapshot of all the BEA WLS VM instances to have a consistent image before upgrade. You can take snapshots either online (running VM) or offline (powered off). It is recommended to take snapshot on the offline VM to get a time consistent image especially in high volume environment.

7.2 Upgrading Production BEA WebLogic Application Server using VM Cloning

We will create an exact clone of the current production VMs running 8.1 and move into an isolated (test) network environment.

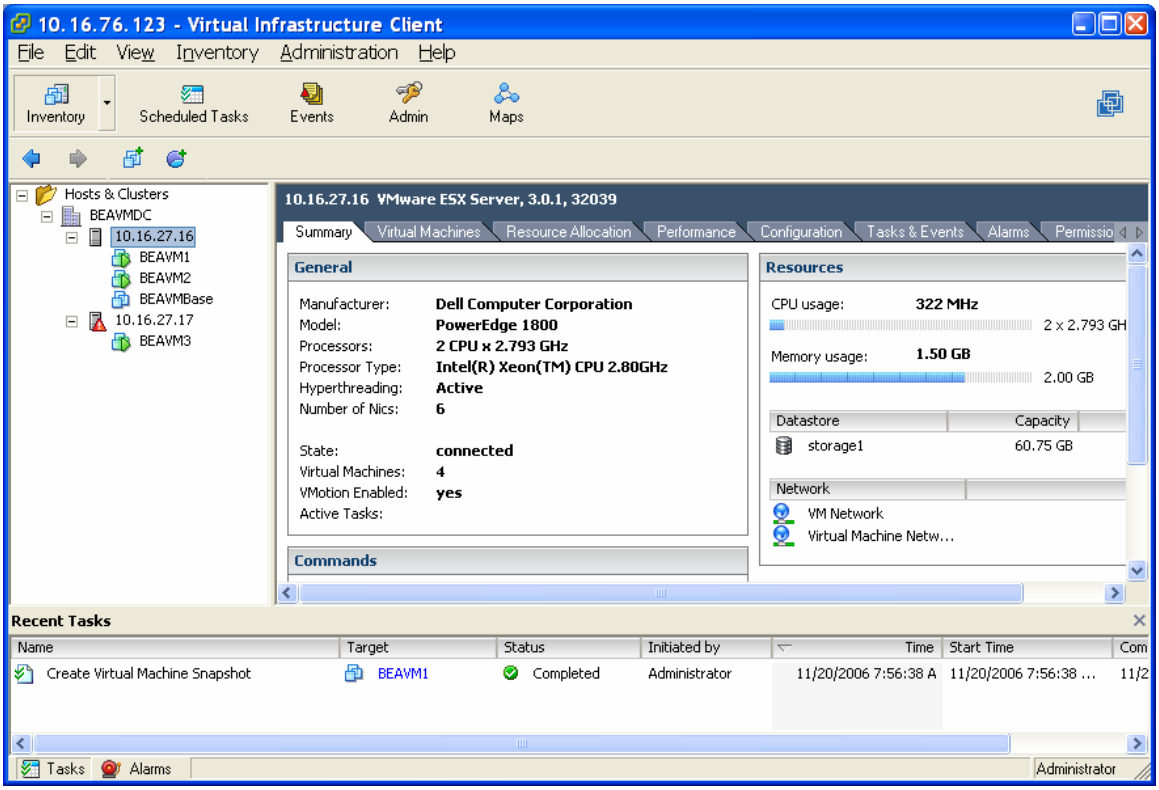
Create a second virtual network switch (private – not exposed to the public) on the ESX Server host. Do not associate this virtual switch with any physical NIC. This will ensure that the VM created on this virtual switch can only communicate with other VMs on the same switch and cannot talk to the public network or other VMs on the virtual switch (VM network) already created and associated with the physical Ethernet interface.

7.2.1 Creating a New Virtual Switch

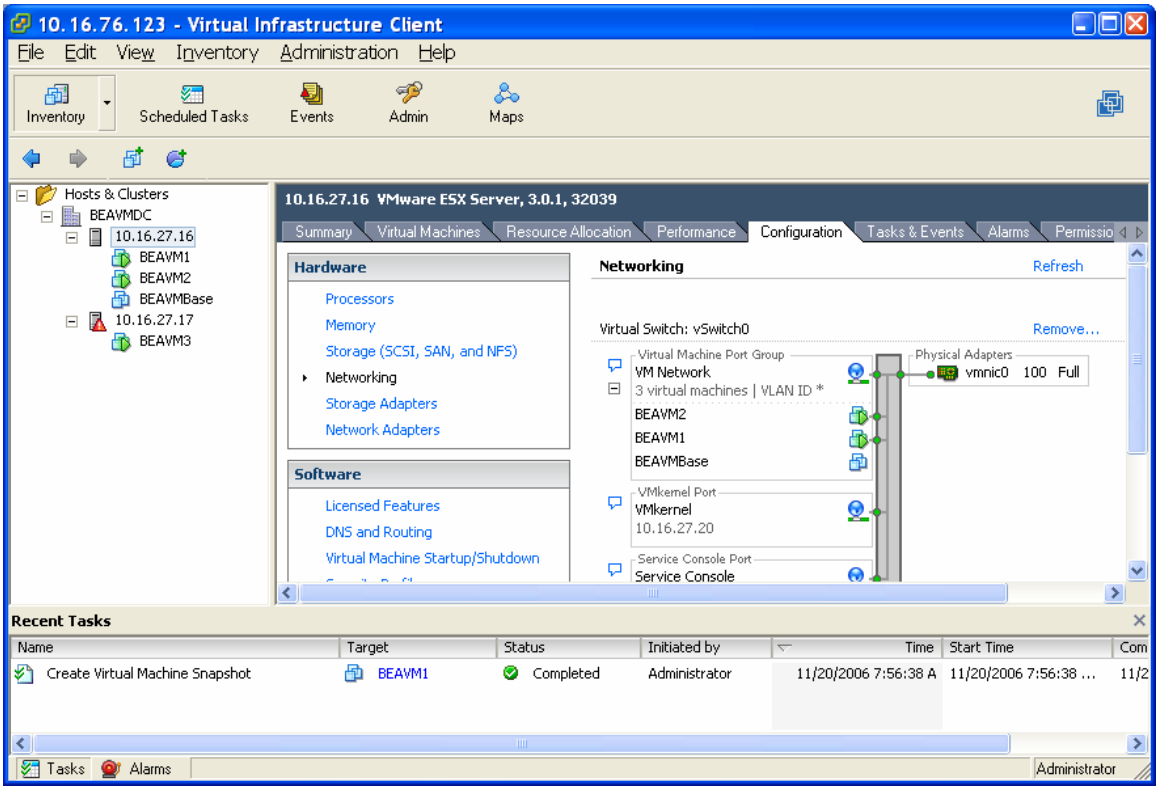
We will be hosting the test environment on 10.16.27.16. In your environment, you can either host it on the same ESX host or (recommended) use a different ESX server not on the production environment

Login to VI client and select “host”

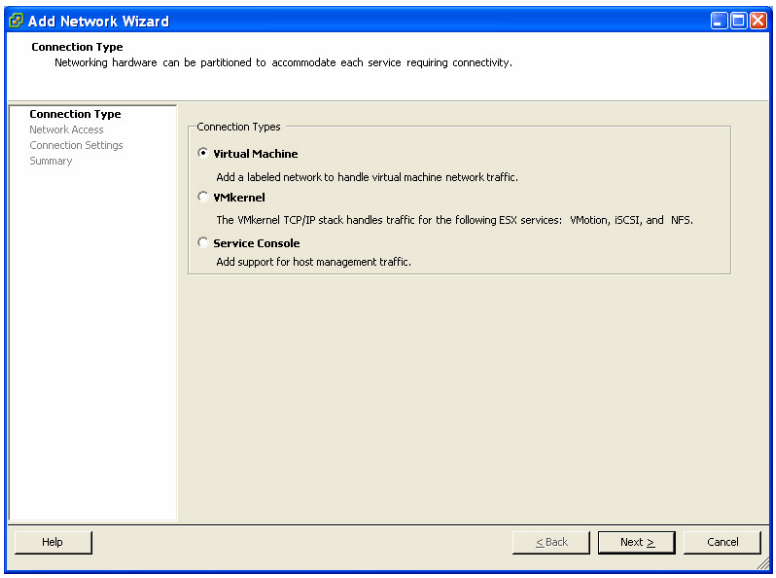
Go to the ESX host for the test environment:



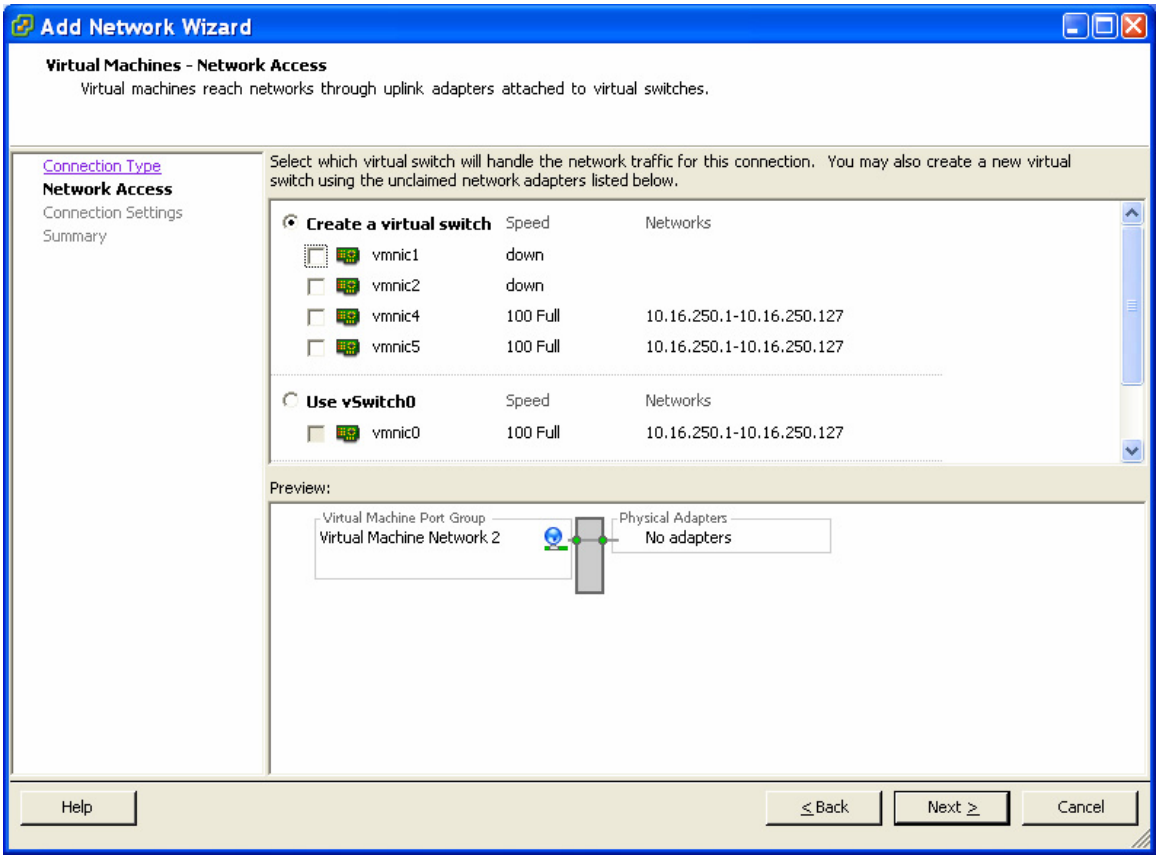
Click on “configuration” tab on the right side and go to “networking”



Click on “add networking” on the right hand corner (top)

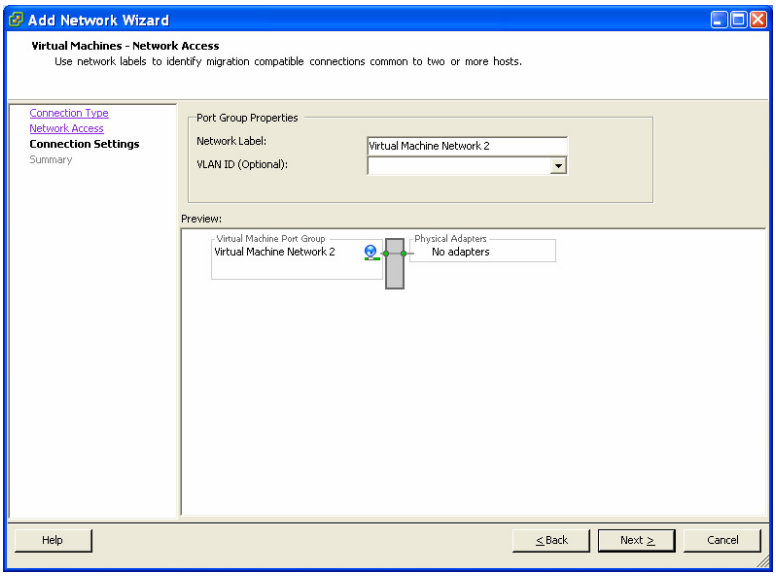


Select “virtual machine”

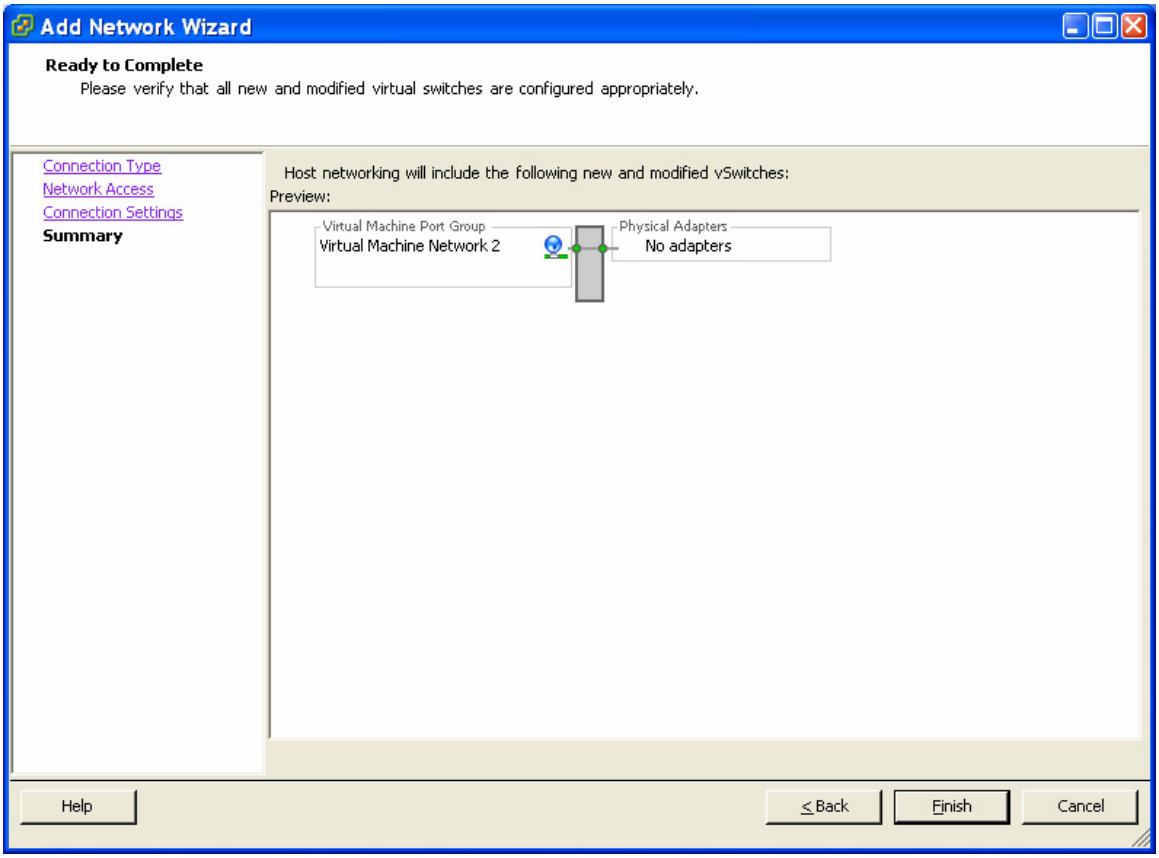


Check “create a virtual switch” but make sure to uncheck vmnic1. Remember, we are creating a virtual switch without associating with any physical network interface.

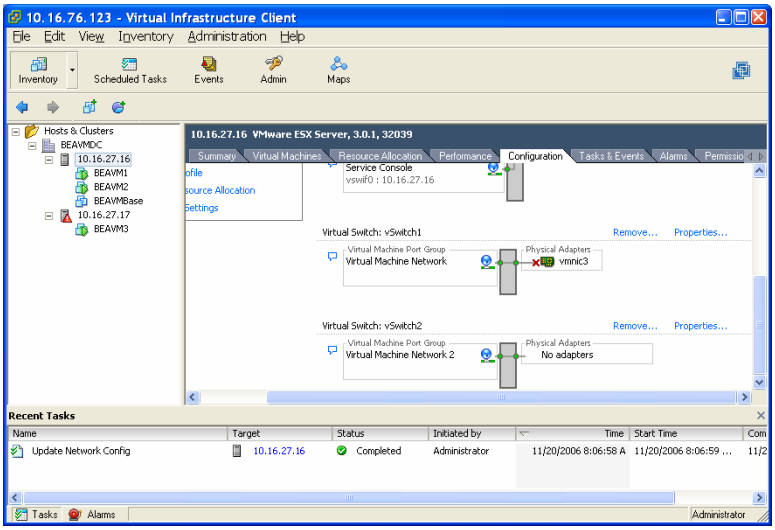
You can always associate with a physical NIC as long as the NIC and virtual switch or configured to be a separate network and will not co-exist with the original VM on the production network. Also, it is important to note that we are creating an exact mirror image of the production BEA WLS VM so all the network settings will remain the same.



Take the default name VM Network 2.



Click “finish”

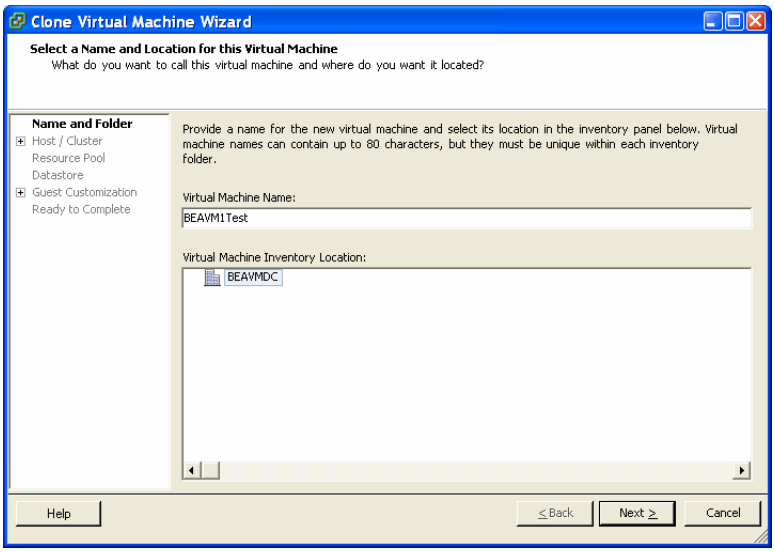


This will create the new virtual switch and virtual interface that can be used for our upgrade VMs that will be cloned from production VM (BEAVM1/2/3).

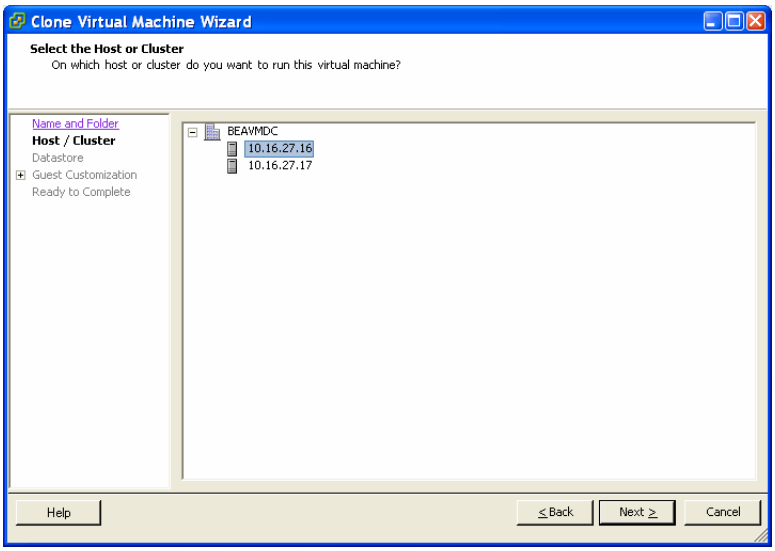
7.2.2 Creating a clone for upgrade

Shutdown all your BEA WLS VM nodes to prepare for cloning. We will clone all of the BEA WLS VM nodes into the test environment at the same time. Then we will bring up the production instances back up for production use while we perform upgrade and testing on the replicated test VMs.

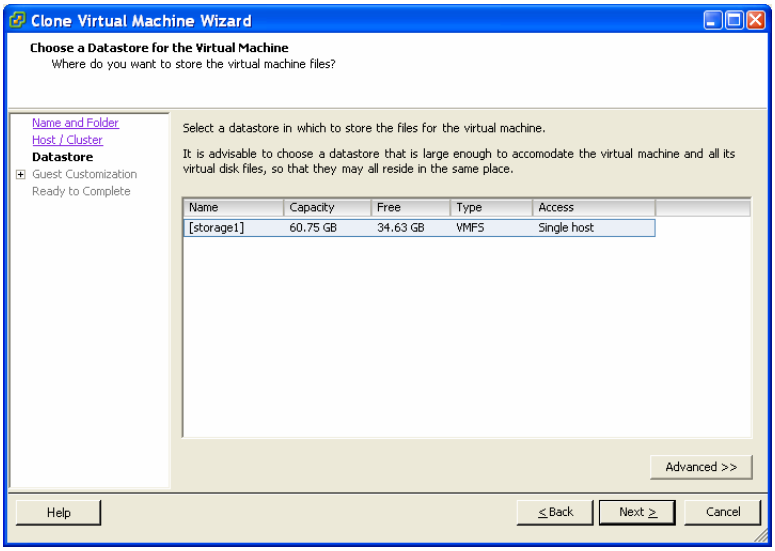
On the VI client, right click BEAVM1 → clone


Clone Virtual Machine Wizard
Select a Name and Location for this Virtual Machine
What do you want to call this virtual machine and where do you want it located?
Name and Folder
Host / Cluster
Resource Pool
Datastore
Guest Customization
Ready to Complete
Provide a name for the new virtual machine and select its location in the inventory panel below. Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder.
Virtual Machine Name:
BEAVM1Test
Virtual Machine Inventory Location:
BEAVMDC
Help
< Back
Next >
Cancel

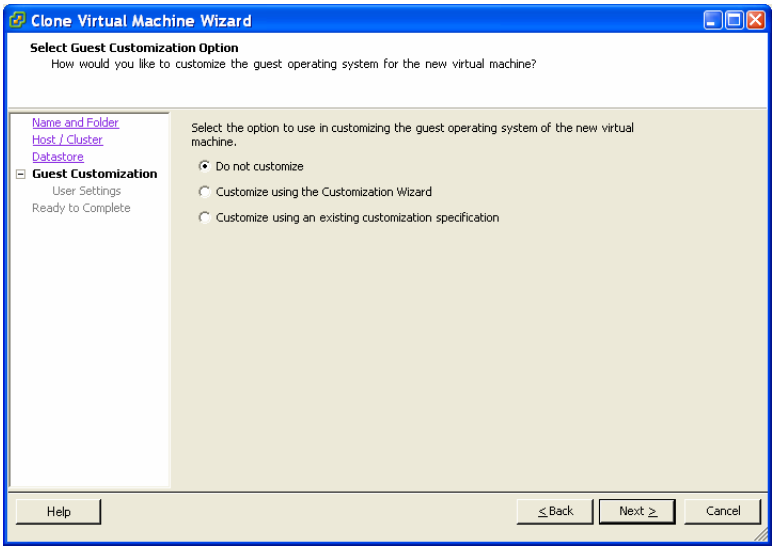
Provide a new VM name (BEAVM1Test).
If you want to store the clone in a separate inventory location (different datacenter location), you can provide that above.



Pick the host you want the test environment to reside on. We used one of our existing hosts (10.16.27.16). This means BEAVM3 which is on 10.16.27.17 will also be cloned to .16.


Clone Virtual Machine Wizard
Choose a Datastore for the Virtual Machine
Where do you want to store the virtual machine files?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
Select a datastore in which to store the files for the virtual machine.
It is advisable to choose a datastore that is large enough to accomodate the virtual machine and all its virtual disk files, so that they may all reside in the same place.
Name
Capacity
Free
Type
Access
[storage1]
60.75 GB
34.63 GB
VMFS
Single host
Advanced >>
Help
< Back
Next >
Cancel

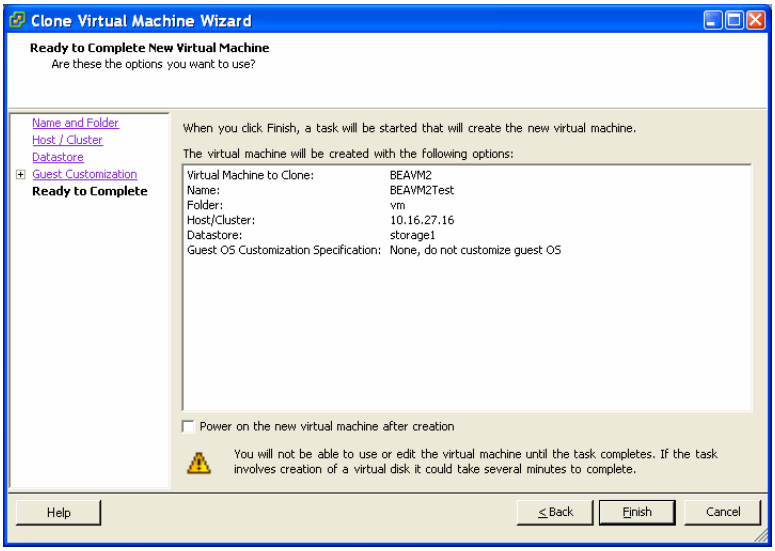
Select datastore (storage1).

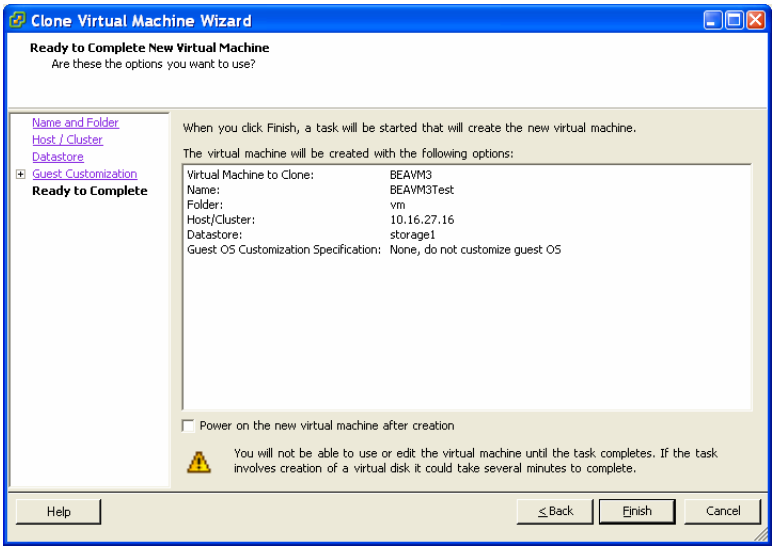

Clone Virtual Machine Wizard
Select Guest Customization Option
How would you like to customize the guest operating system for the new virtual machine?
Name and Folder
Host / Cluster
Datastore
Guest Customization
User Settings
Ready to Complete
Select the option to use in customizing the guest operating system of the new virtual machine.
Do not customize
Customize using the Customization Wizard
Customize using an existing customization specification
Help
< Back
Next >
Cancel

Select “do not customize”. Remember, we want to keep the clone an exact mirror of our production (original) VM – BEAVM1. This will help us to make sure that all the OS and application settings are retained during upgrade and help quickly re-provision this system as the new production VM (post upgrade).

Say “Finish” to start the cloning.

Repeat the above steps for all the other BEA WebLogic nodes on the domain.


Clone Virtual Machine Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Virtual Machine to Clone: BEAVM2
Name: BEAVM2Test
Folder: vm
Host/Cluster: 10.16.27.16
Datastore: storage1
Guest OS Customization Specification: None, do not customize guest OS
Power on the new virtual machine after creation
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

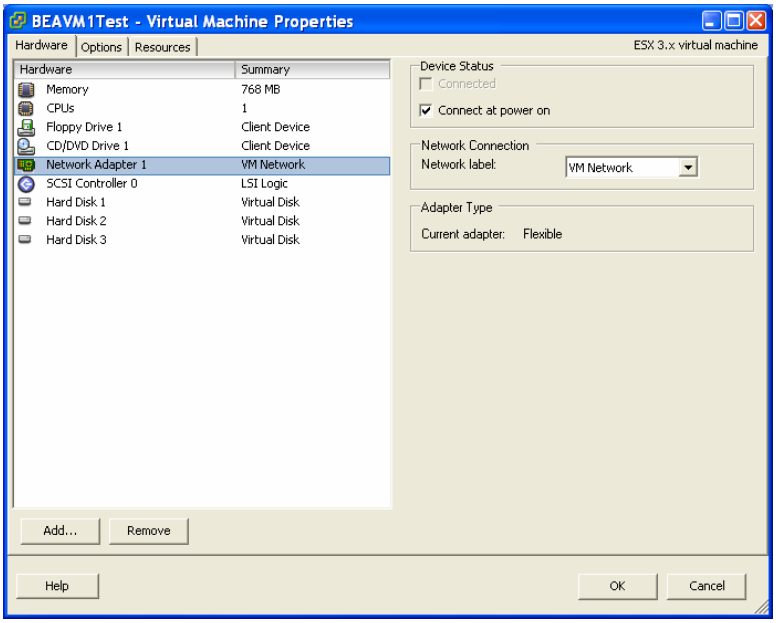

Clone Virtual Machine Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
Name and Folder
Host / Cluster
Datastore
Guest Customization
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Virtual Machine to Clone: BEAVM3
Name: BEAVM3Test
Folder: vm
Host/Cluster: 10.16.27.16
Datastore: storage1
Guest OS Customization Specification: None, do not customize guest OS
Power on the new virtual machine after creation
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Once the cloning is completed,

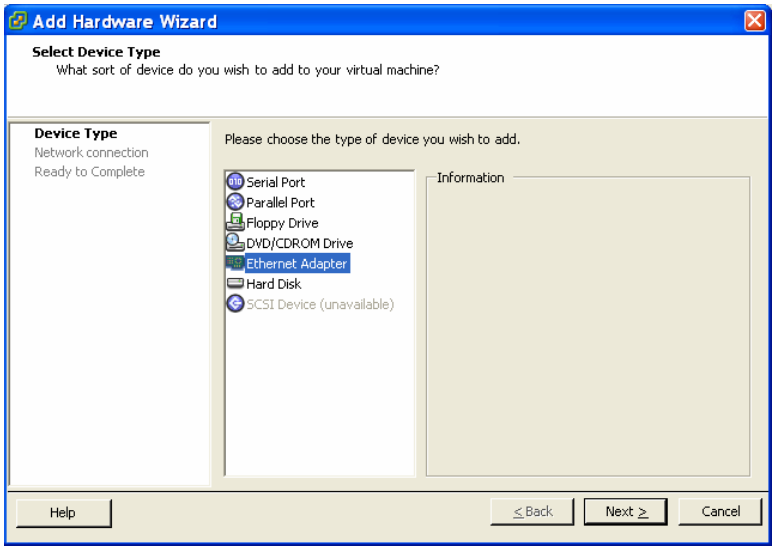
Edit the network settings for the new clone.

Right click on BEAVM1Test → Edit settings

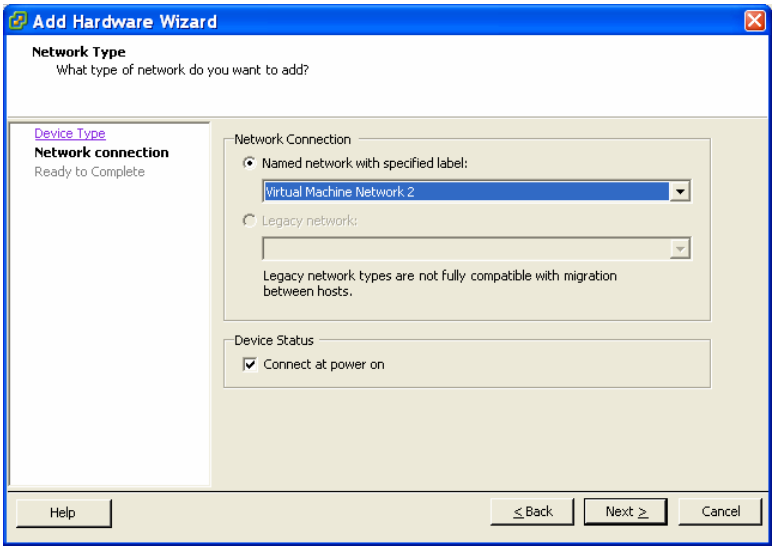
Highlight network adapters



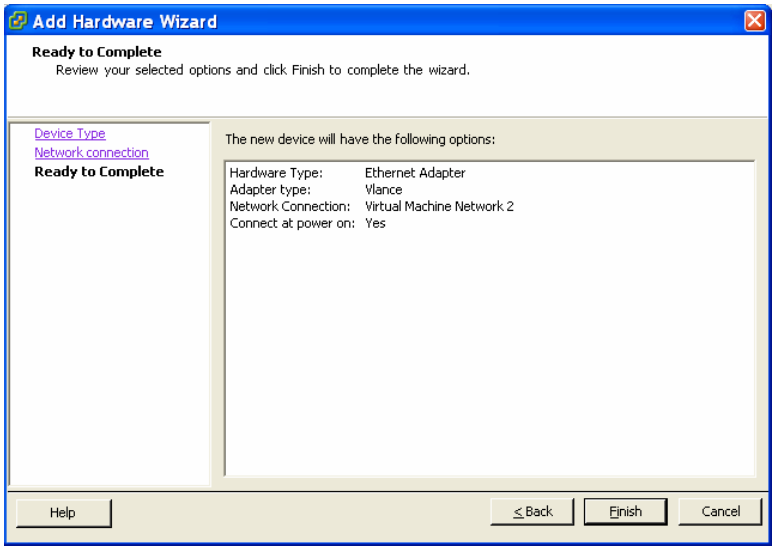
Click “add” to add a new network interface



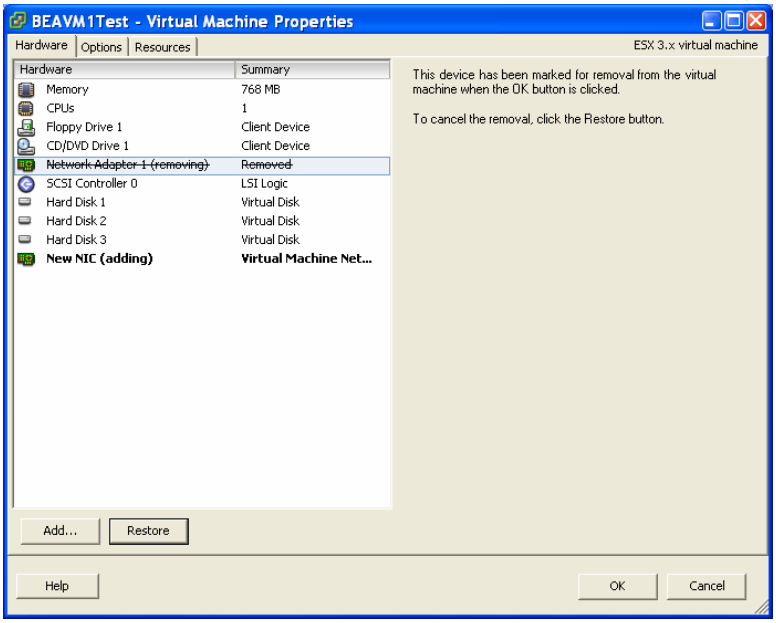
Select “Ethernet adapter”



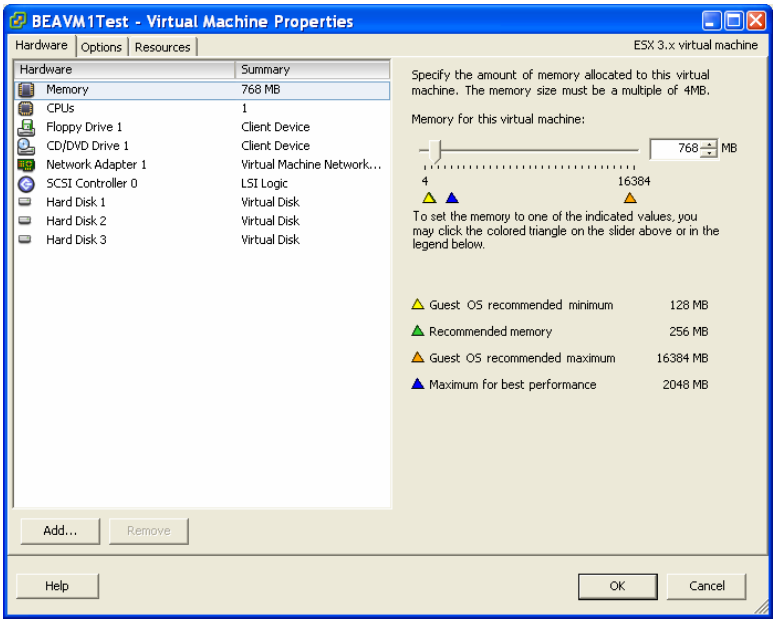
Select “named network with specific label” and select “Virtual Machine Network 2” that we had created.



Click “finish”.



Go to network adapter 1 (VM Network) and click “remove”.



Click “ok”. This will delete the VM network for the new clone while making VM Network 2 the new virtual switch network for BEAVM1Clone.

Repeat these steps for the other cloned BEA WLS VM (BEAVM2Test, BEAVM3Test) nodes.

Now we have successfully configured all the BEA WLS VM clones on a network isolated from production.

“Power on” the cloned VMs (BEAVM1Test, BEAVM2Test, BEAVM3Test). Make sure that the environment and application is working as it did in production.

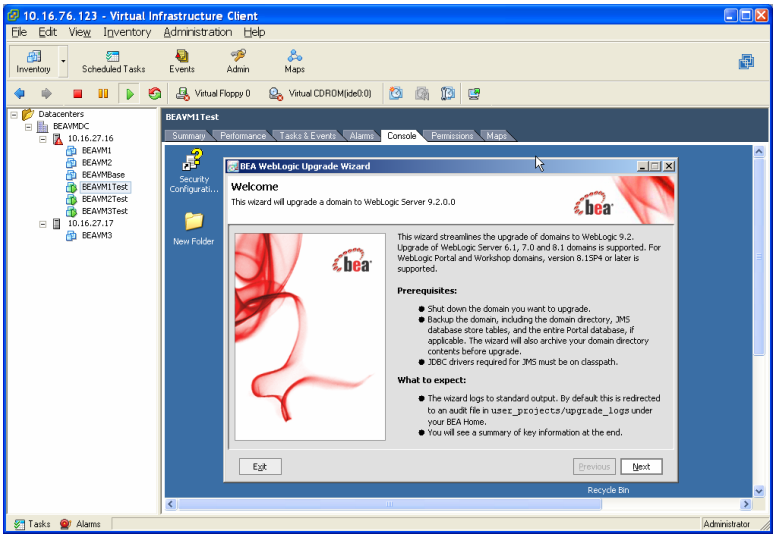
7.3 Upgrading BEA WebLogic 8.1 to 9.2

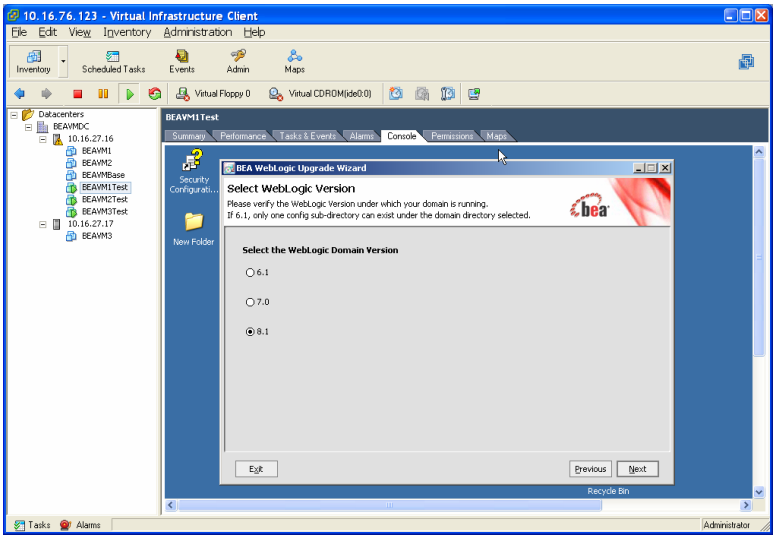
In this section, we will illustrate a migration path for the test VM node(s) running BEA domain. Stop all the BEA WebLogic services before upgrade. Then install 9.2 as shown in chapter 4 onto a separate directory on the test nodes.

We recommend that you follow upgrade procedure as outlined in BEA documentation. We have provided an example scenario of the upgrade process for illustration purposes.

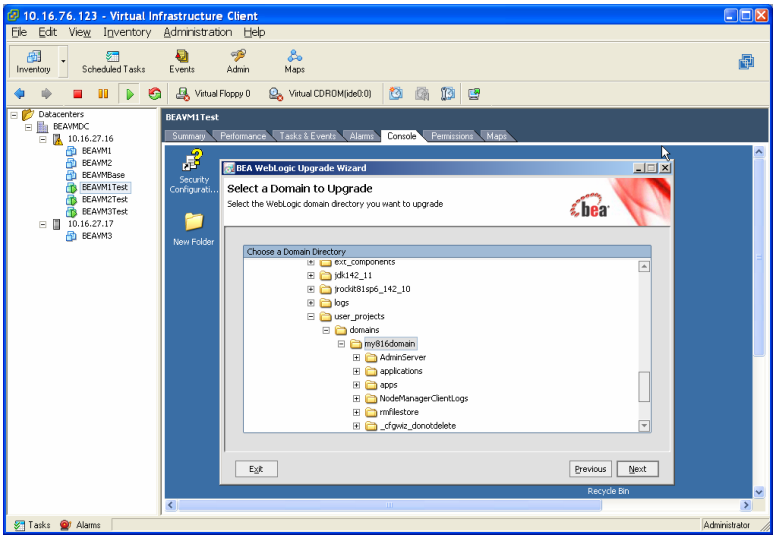
7.3.1 Upgrading the 8.1 BEA WebLogic Domain

On BEAVM1 running the 8.1 admin server,
Go to 9.2 product menu (under start → programs → BEA products → tools) and click “domain upgrade wizard”.

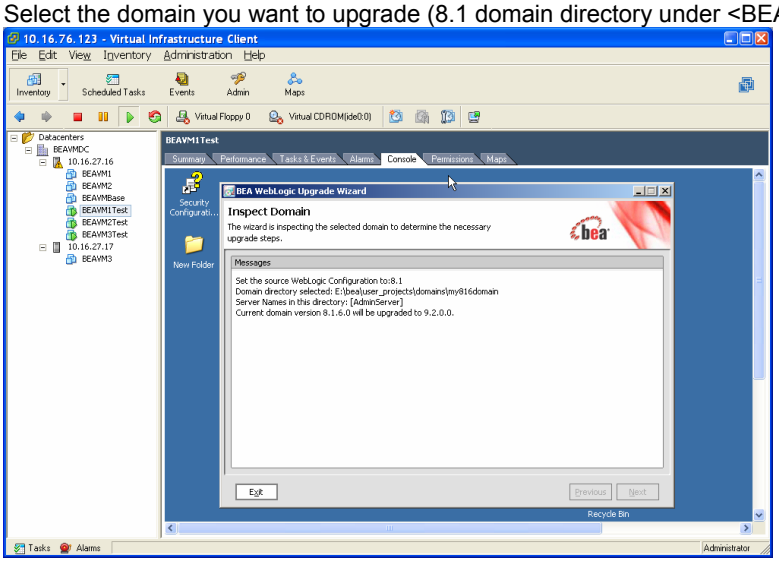


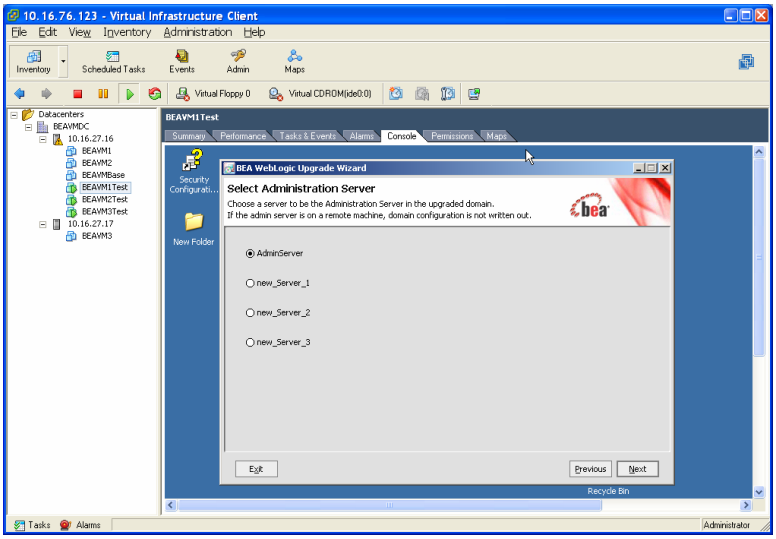


Specify current WebLogic domain version. (8.1)

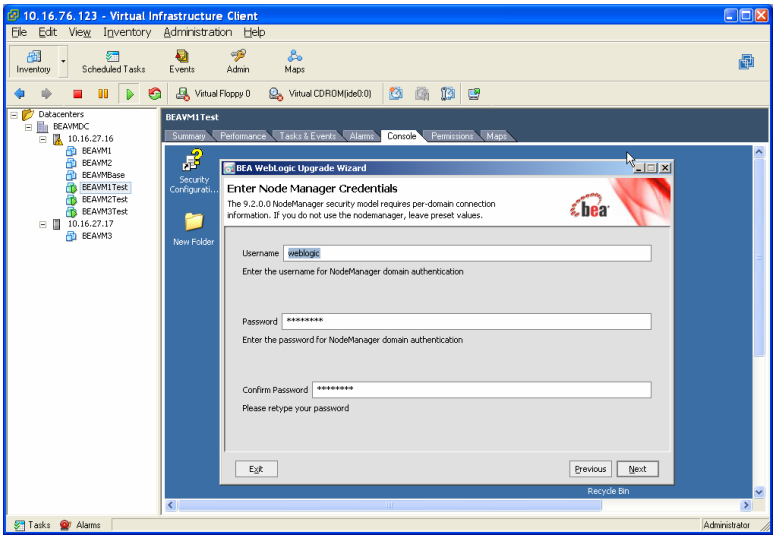

10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
BEA WebLogic Upgrade Wizard
Select a Domain to Upgrade
Select the WebLogic domain directory you want to upgrade
Choose a Domain Directory
Exit
Previous
Next

Select the domain you want to upgrade (8.1 domain directory under <BEA_HOME8.1>/user_projects).

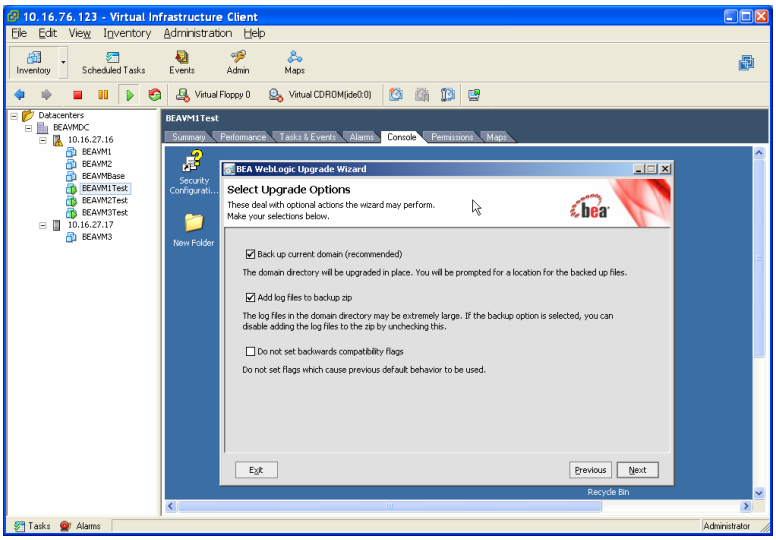

10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
BEA WebLogic Upgrade Wizard
Inspect Domain
The wizard is inspecting the selected domain to determine the necessary upgrade steps.
Messages
Set the source WebLogic Configuration to:8.1
Domain directory selected: E:\bea\user_projects\domains\my816domain
Server Names in this directory: [AdminServer]
Current domain version 8.1.6.0 will be upgraded to 9.2.0.0.
Exit
Previous
Next


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
BEA WebLogic Upgrade Wizard
Select Administration Server
Choose a server to be the Administration Server in the upgraded domain.
If the admin server is on a remote machine, domain configuration is not written out.
AdminServer
new_Server_1
new_Server_2
new_Server_3
Exit
Previous
Next

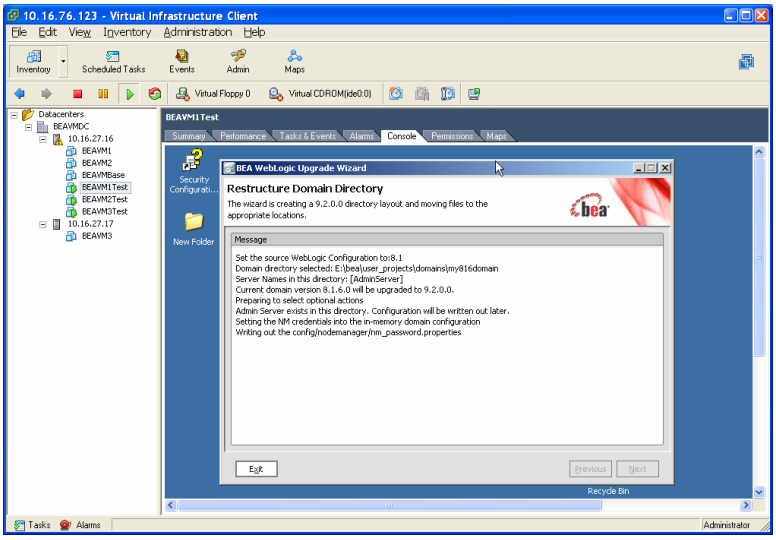
Select “adminserver” to be the new “adminserver” post upgrade.



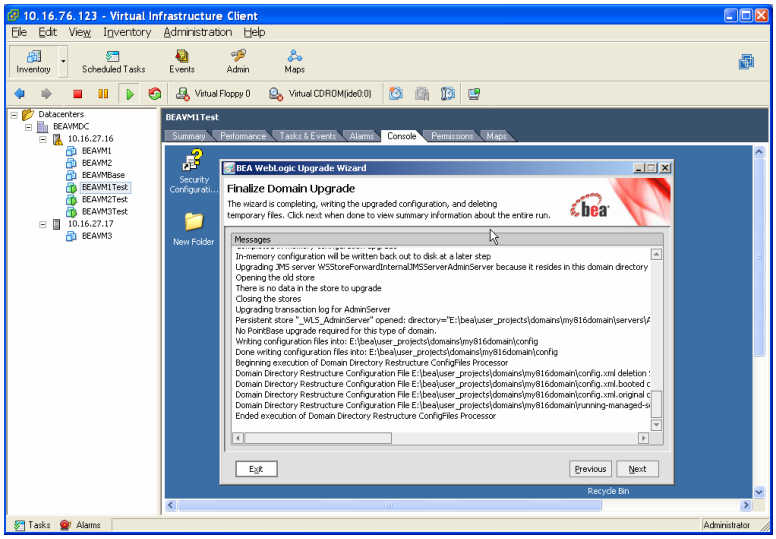
Enter the credentials for the node manager (username: weblogic password: ****)

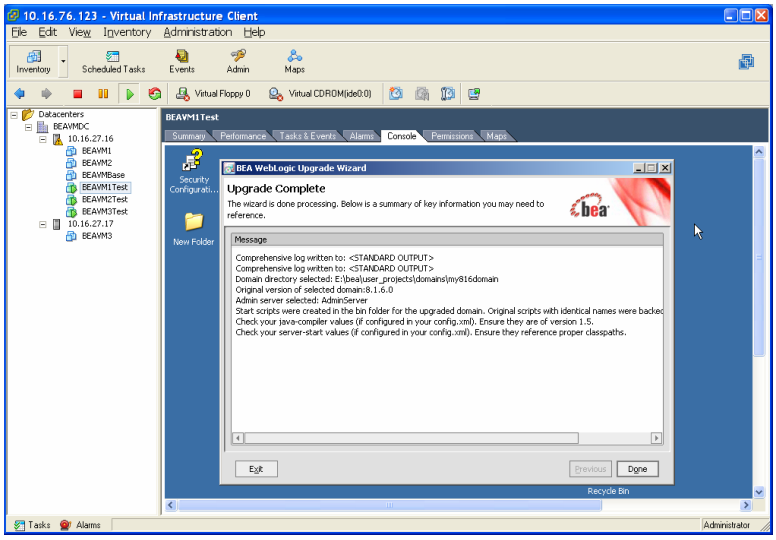


It is recommended to back up the domain that is being upgraded.


10.16.76.123 - Virtual Infrastructure Client
BEA WebLogic Upgrade Wizard
Restructure Domain Directory
The wizard is creating a 9.2.0.0 directory layout and moving files to the appropriate locations.
Exit
Previous
Next

The wizard will create a 9.2 directory layout and move files to appropriate locations.


10.16.76.123 - Virtual Infrastructure Client
BEA WebLogic Upgrade Wizard
Finalize Domain Upgrade
The wizard is completing, writing the upgraded configuration, and deleting temporary files. Click next when done to view summary information about the entire run.
Exit
Previous
Next

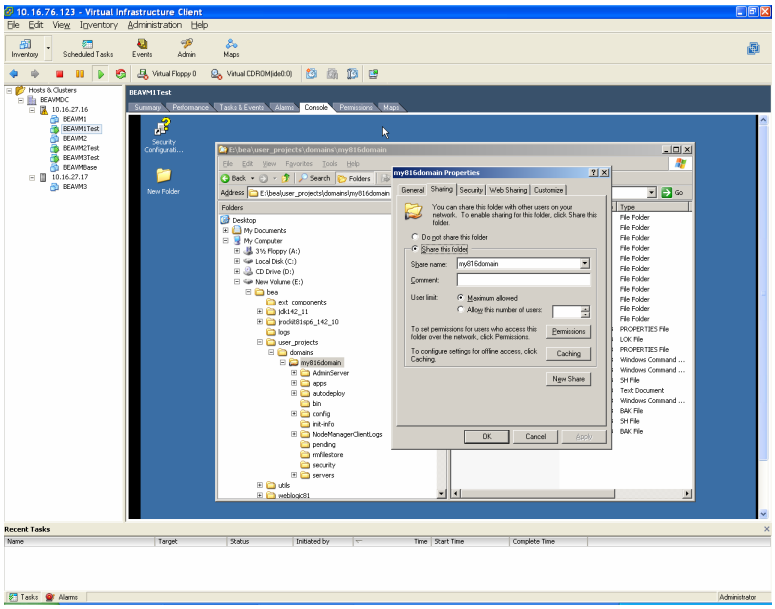

10.16.76.123 - Virtual Infrastructure Client
BEA WebLogic Upgrade Wizard
Upgrade Complete
The wizard is done processing. Below is a summary of key information you may need to reference.
Exit
Previous
Done

Note: We only need to perform this domain upgrade procedure on BEAVM. BEAVM2 and BEAVM3 are kept intact.

7.3.2 Customization on the remote managed servers

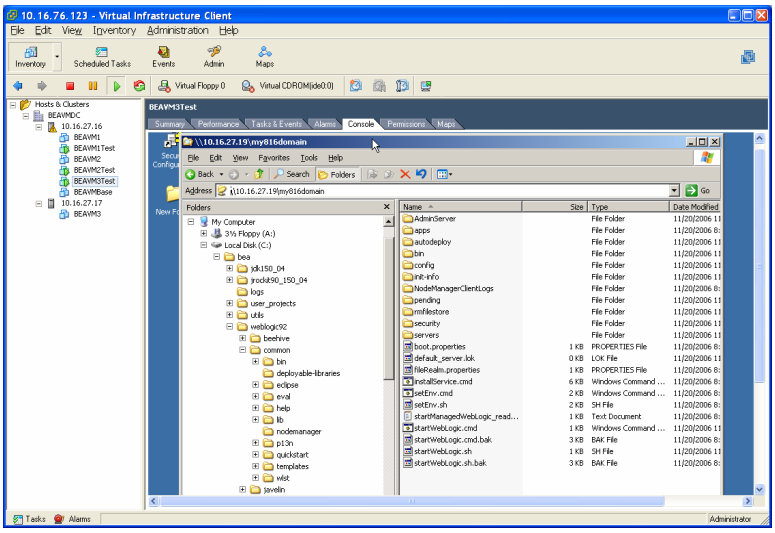
Note: The way node manager is configured in WLS 9.x is different from the 8.x versions.

1. Share the admin server's <domain-dir> directory on BEAVM1

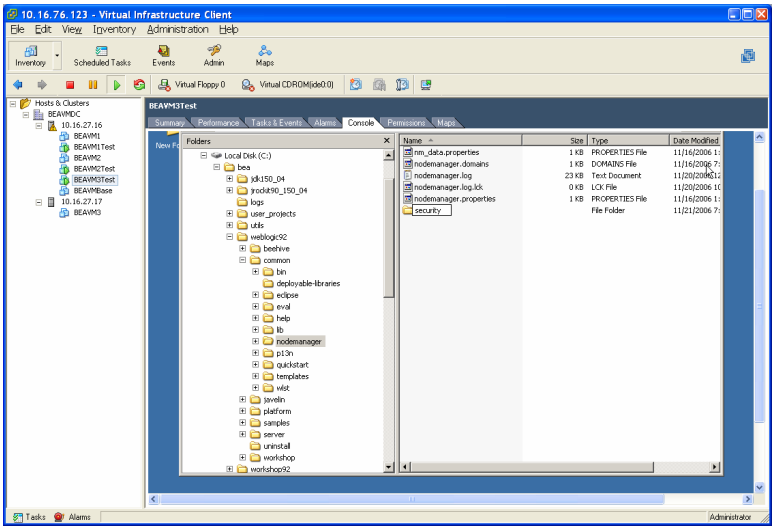


For example, open the shared folder from BEAVM3 to copy the required files mentioned above.

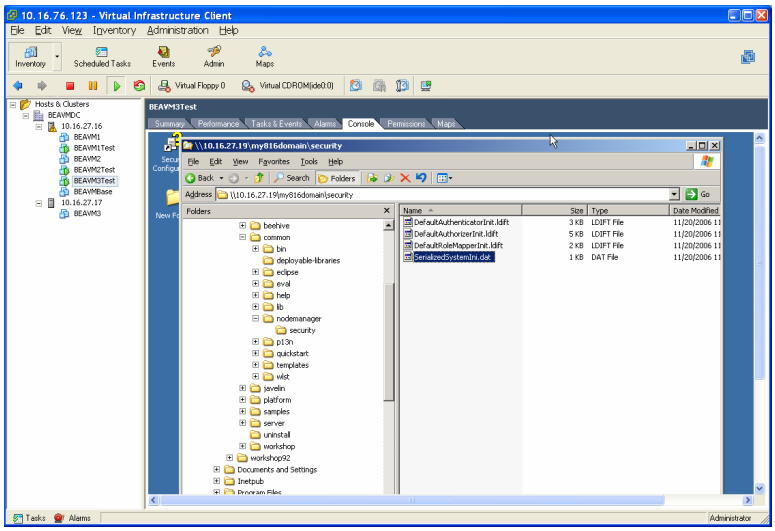
2. On managed server node (BEAVM3) go to your WLS 9.2's installation directory to look for <WL_HOME> common/nodemanager directory. Then copy the required files to this directory from BEAVM1's shared <my816domain> directory as follows:



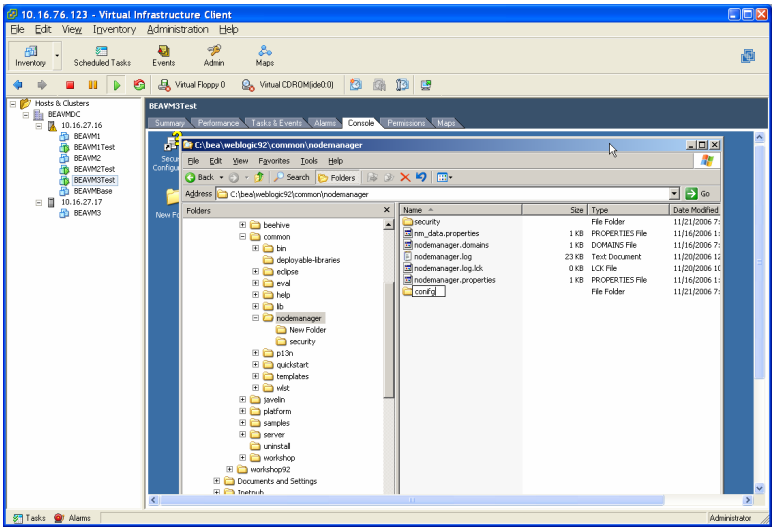
Create a new folder called “security” under <WL_HOME>/common/nodemanager:



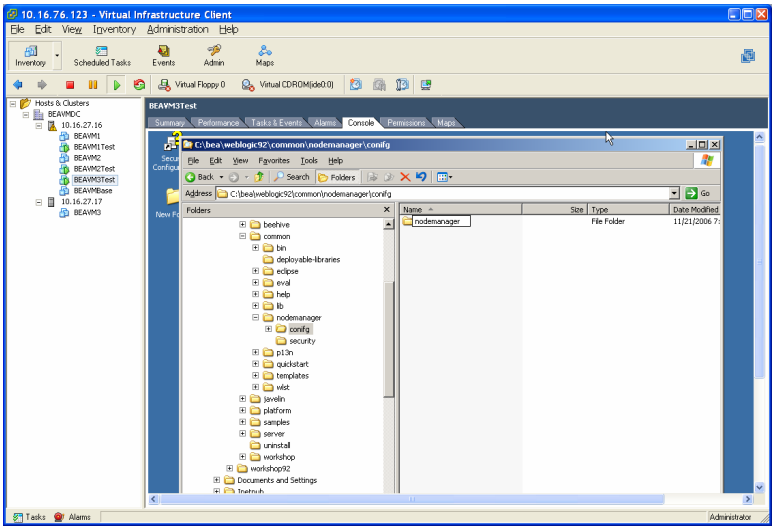
Copy the Serializedsystemini.dat from 10.16.27.19\my816domain\security to <WL_HOME>/common/nodemanager/security folder.



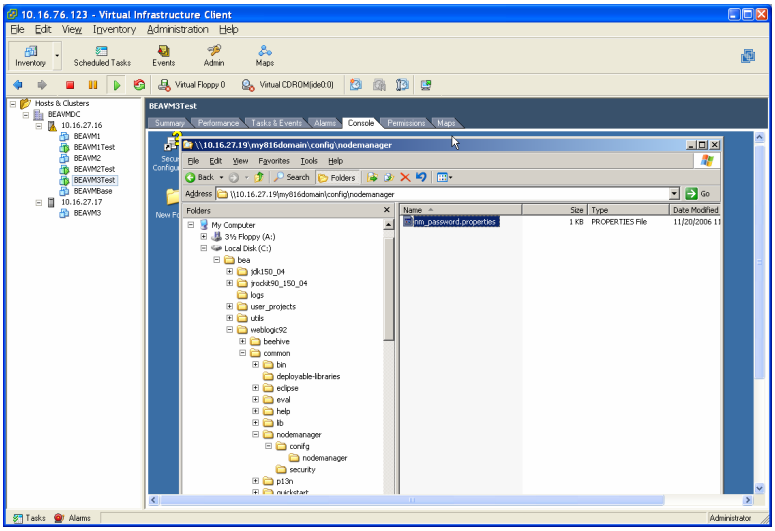
3. Create a folder named “config” under <WL_HOME>/common/nodemanager folder.



Create another folder named “nodemanager” under the newly created <WL_HOME>/common/nodemanager/config folder.



Copy the file named “nm_password.properties” from 10.16.27.19/my816domain/config/nodemanager to the newly created <WL_HOME>/common/nodemanager/config/nodemanager folder.

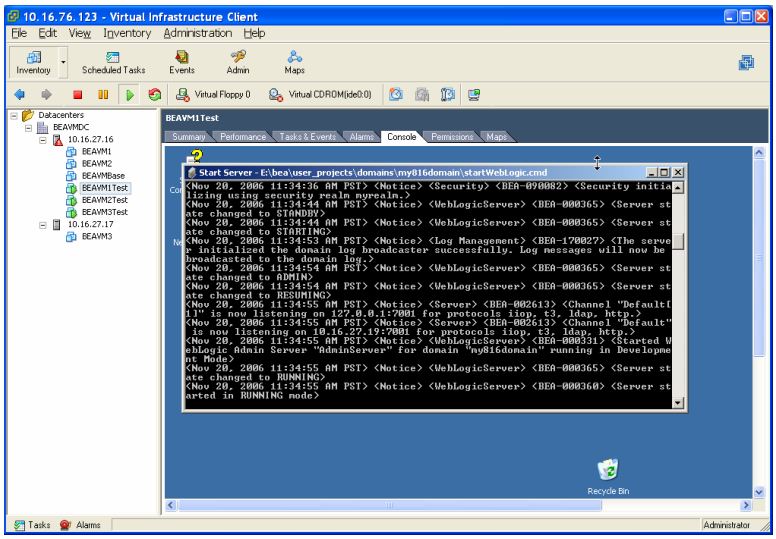


4. Now install the 9.2 node manager (after the 9.2 software installation) as Windows service (refer to chapter 4.0 on how to install node manager) on all the nodes.

At the end of this, the current 8.1.6 directory structure is upgraded to 9.2. You will need to perform the same procedure above on BEAVM2 and other BEA WLS nodes as well.

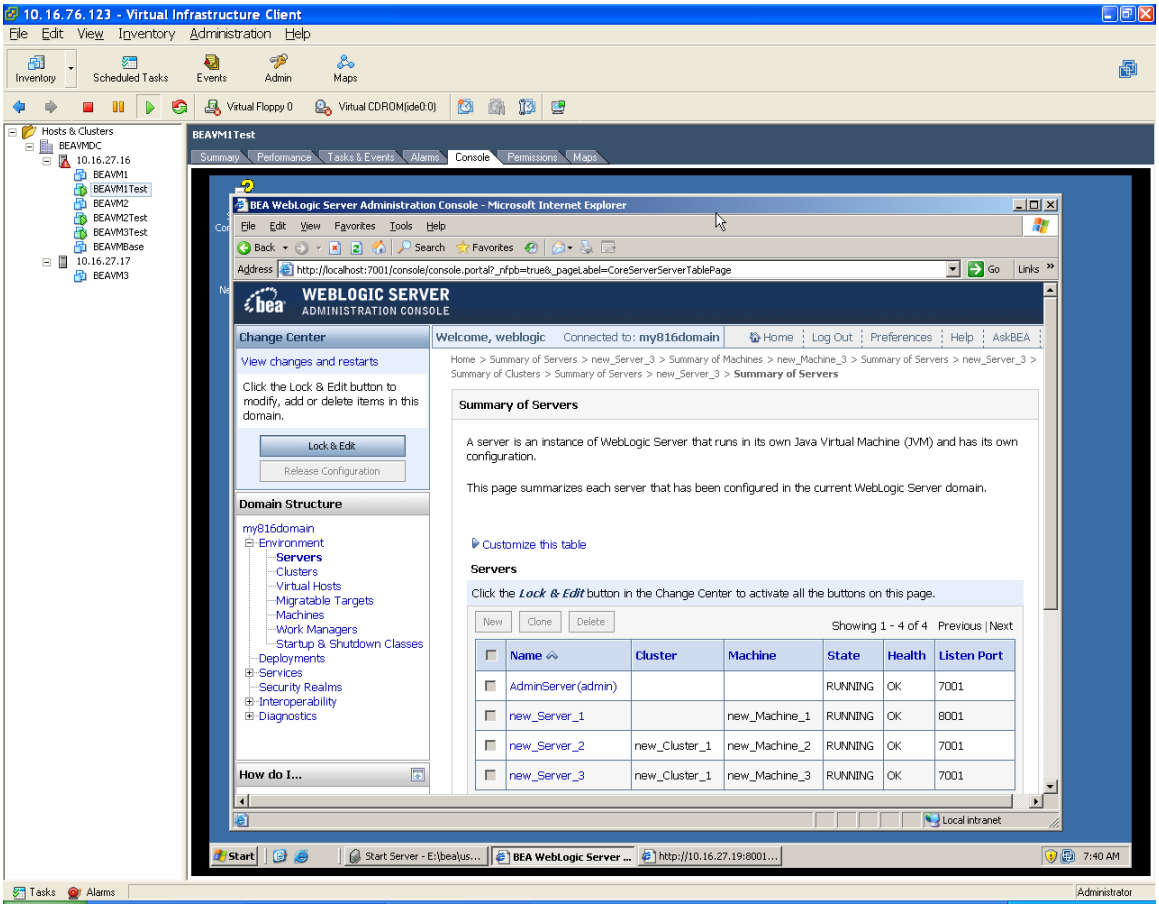
7.3.3 Starting the Upgraded BEA WLS Application Environment

Now go to the original 8.1 domain on the program menu (on the admin server)
Ie., start → programs → BEA Weblogic platform 8.1→ user projects → my 81.6 domain → start server



Go to Admin server console and start MS1 (new_server_1), MS2 (new_server_2) and MS3 (new_server_3).

Once all the managed servers are up and running, you are ready to run the sample application to test the new upgraded environment.



You are ready to test and run your applications in the upgraded environment.

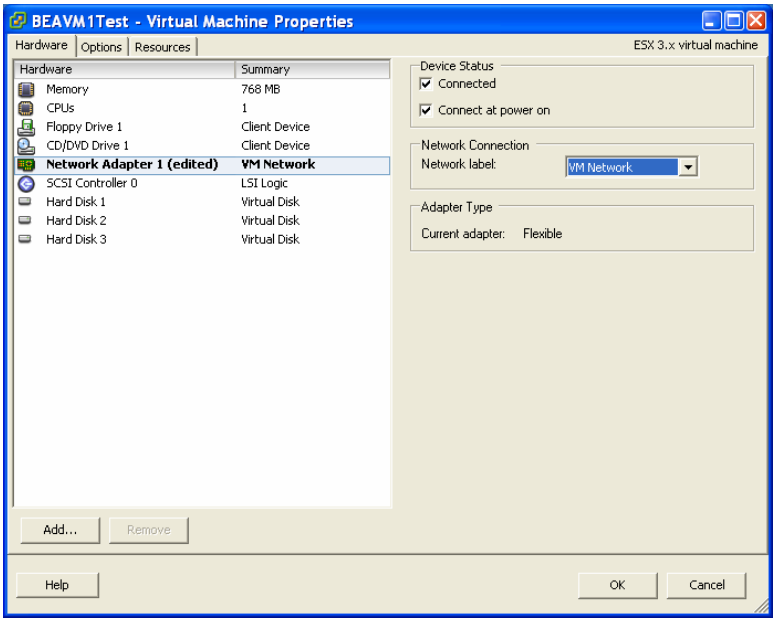
We tested our sample application, “examplesWebApp” in our upgraded “my816domain” in 9.2 WebLogic environment.

Please follow BEA documentation to upgrade your custom WLS environment.

7.4 Migrating BEA 9.2 VM Clone to Production

Shutdown the production VMs and make the clones (BEAVM1Test, BEAVM2Test, BEAVM3Test) as the new BEA production environment. Since all the attributes are retained, you can move this clone directly into production.

Go to VirtualCenter Console → right click on “BEAVM1Test” → edit settings → network adapters.



Change VM Network 2 to VM network.

Make sure the original production VMs are offline before doing this.

Repeat the step for other VM clones.

Now your upgraded VM environment is online and your user traffic can be directed to the upgraded BEA WebLogic application.

7.4.1 Verification of Upgrade and BEA WLS functionality

Go to any browser on the public network,

http://10.16.27.19:8001/examplesWebApp/HelloWorldServlet

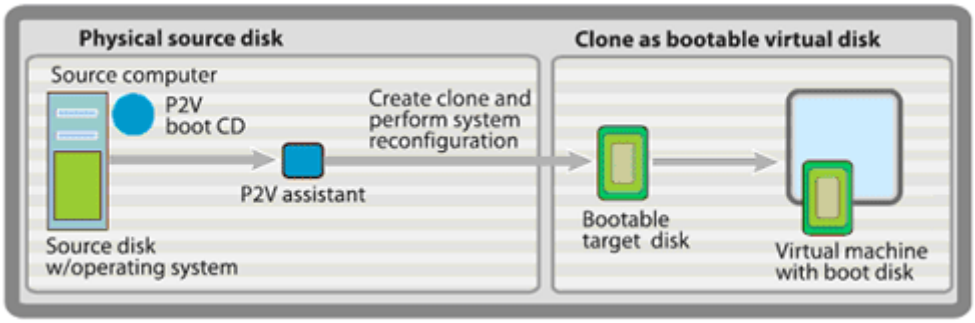
Pls. refer to http://edocs.bea.com/common/docs92/upgrade/index.html

8.0 Converting Physical BEA WebLogic Server Instance to a Virtual Machine Instance

VMware P2V Assistant is an enterprise-class migration tool that transforms an image of an existing physical system into a VMware virtual machine.

VMware P2V Assistant allows you to:

- Non-intrusively copy and transform physical systems into VMware virtual machines
- Migrate legacy servers to new hardware with no need to reinstall operating systems or application software
- Perform migrations across heterogeneous hardware
- Proactively readjust disk sizes, types and partitions to maximize utilization of storage resources



P2V will help migrate existing BEA instances on physical servers to BEA WLS VM instances running on the VMware Infrastructure.

For the purpose of demonstrating P2V, we created a BEA WebLogic Server 9.2 server instance on a physical system running on Windows Server 2003 SP1EE and added it to an existing BEA WLS 9.2 domain cluster.

Before installing the P2V tool, check the P2V Platform compatibility guide documentation to ensure that your hardware and operating system are supported for P2V.

The basic P2V Assistant processes are:

Cloning — The process of creating a cloned disk, where the cloned disk is a virtual disk that is an exact copy of the source physical disk. This involves copying the data on a physical source machine's hard disk and transferring that data to a target virtual disk (the new cloned disk). This process can be performed using the P2V Assistant installed on a helper machine (physical or virtual) or using a third-party disk imaging or backup/restore tool running in a helper virtual machine. The helper machine is an intermediary machine that allows the P2V Assistant to interact with the target machine's virtual disks.

System Reconfiguration — The process of adjusting the migrated operating system to enable it to function on virtual hardware. This adjustment is performed on the target virtual disk after the cloning and enables the target virtual disk to function as a bootable system disk in a virtual machine. System reconfiguration is not required if the target virtual disk will not be used as a bootable system disk. This process is performed using the P2V Assistant installed on a helper machine (physical or virtual). A system reconfiguration does not change the identity of the new virtual machine.

Creating the Virtual Machine — Using the new virtual disks in a new virtual machine. If the new virtual machine disk had an operating system and you performed a system reconfiguration on it, the new virtual

machine retains the identity and settings of the original physical machine. These include: machine name, SID, hard disks (partitions), data files, application and user settings. This process does not require the P2V Assistant or a helper machine (physical or virtual). It does require that the cloned disk be detached from the helper virtual machine, if that was used.

If you plan to run the new virtual machine on the same network as the original source machine, you need to modify the identity (name, IP address, and networking) of the virtual machine so the machines can co-exist on the same network.

Note: While the P2V Assistant simplifies the physical-to-virtual migration process by automating several steps, it is not intended to serve as an unattended migration tool for casual use. Migration is complex — and whether using the P2V Assistant or not, only technical system administrators with a good understanding of and familiarity with operating systems, drivers, imaging tools, and VMware products should attempt the physical-to-virtual migration process.

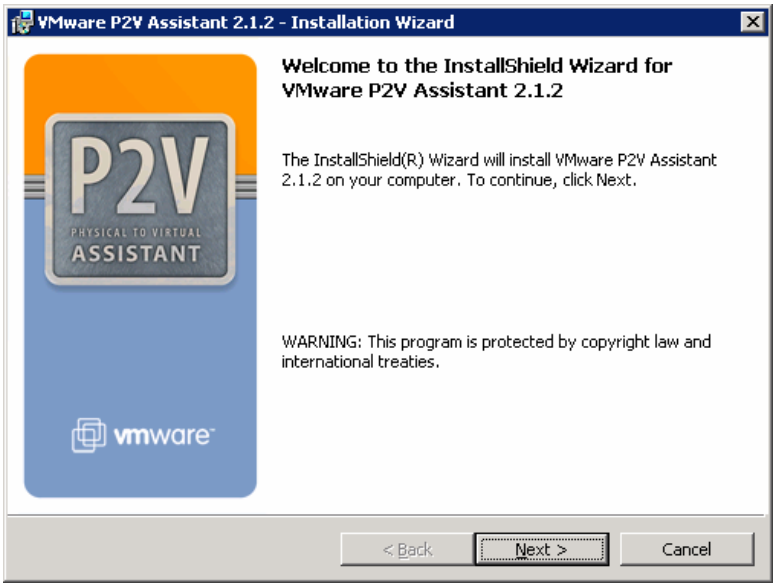
Fundamentally, you need the following components to perform P2V:

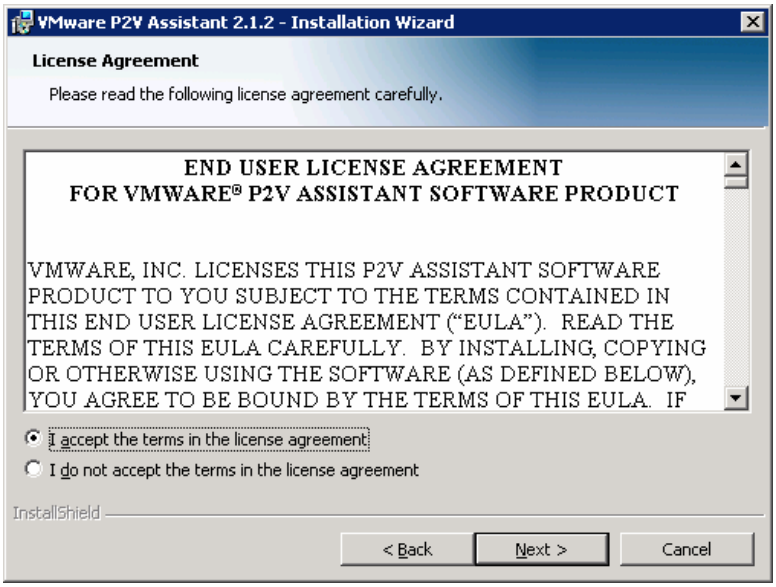
1. The source system – physical system with the OS and BEA WebLogic Server applications configured
2. A Virtual Machine (also known as helper VM) on the current ESX Server host running the same OS as the source system (recommended). P2V assistant will be installed on this helper virtual machine.
3. A new Virtual Machine that will be the final destination for the post P2V virtual environment.

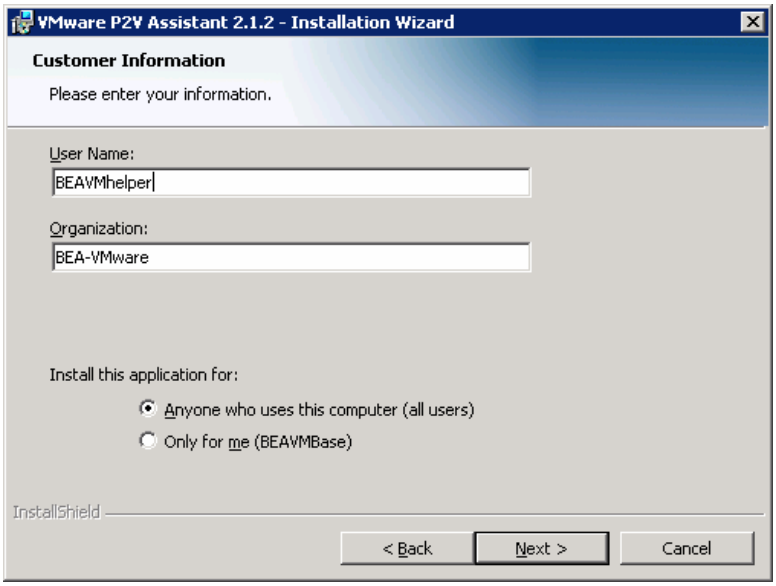
8.1 Installing VMware P2V Assistant

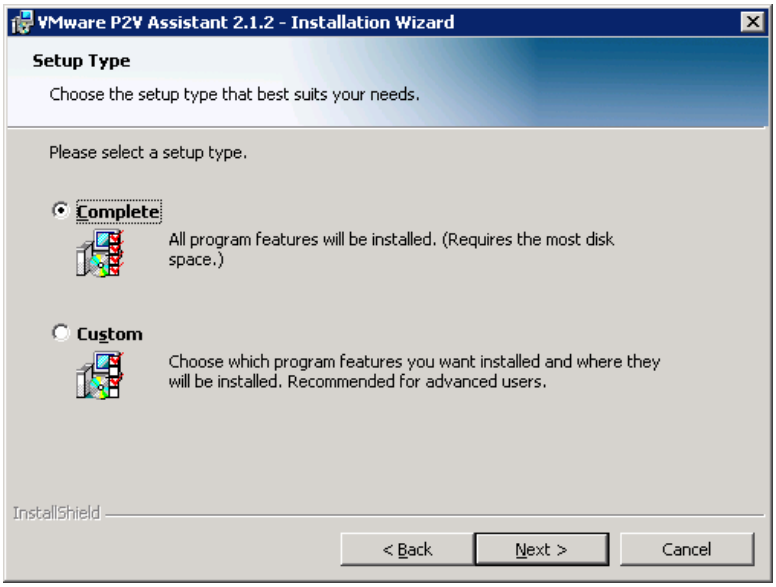
Create a new VM with Windows 2003 EE SP1 loaded on it. This VM is called the helper VM and P2V assistant will be installed on this VM. (In our lab, we decided to use our base image VM (BEAVMBase) for this purpose)

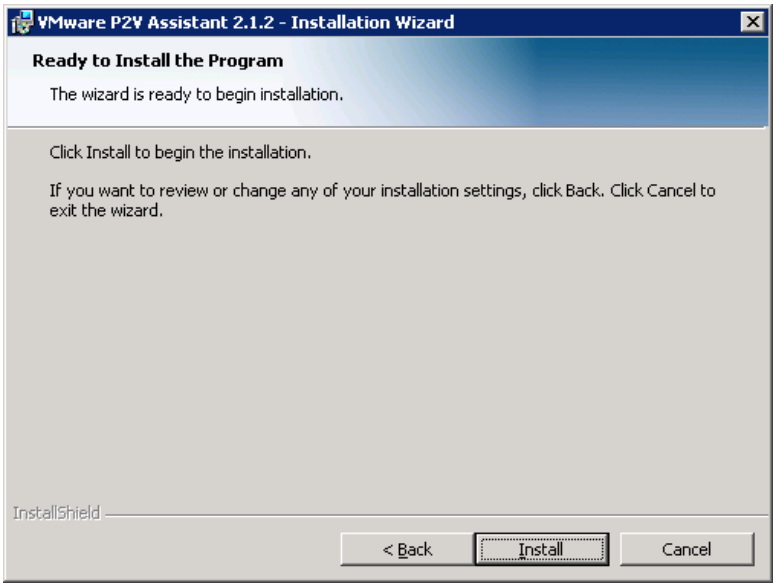
Download the P2V assistant software executable. Start the installation.


VMware P2V Assistant 2.1.2 - Installation Wizard
Welcome to the InstallShield Wizard for VMware P2V Assistant 2.1.2
The InstallShield(R) Wizard will install VMware P2V Assistant 2.1.2 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
vmware
< Back
Next >
Cancel

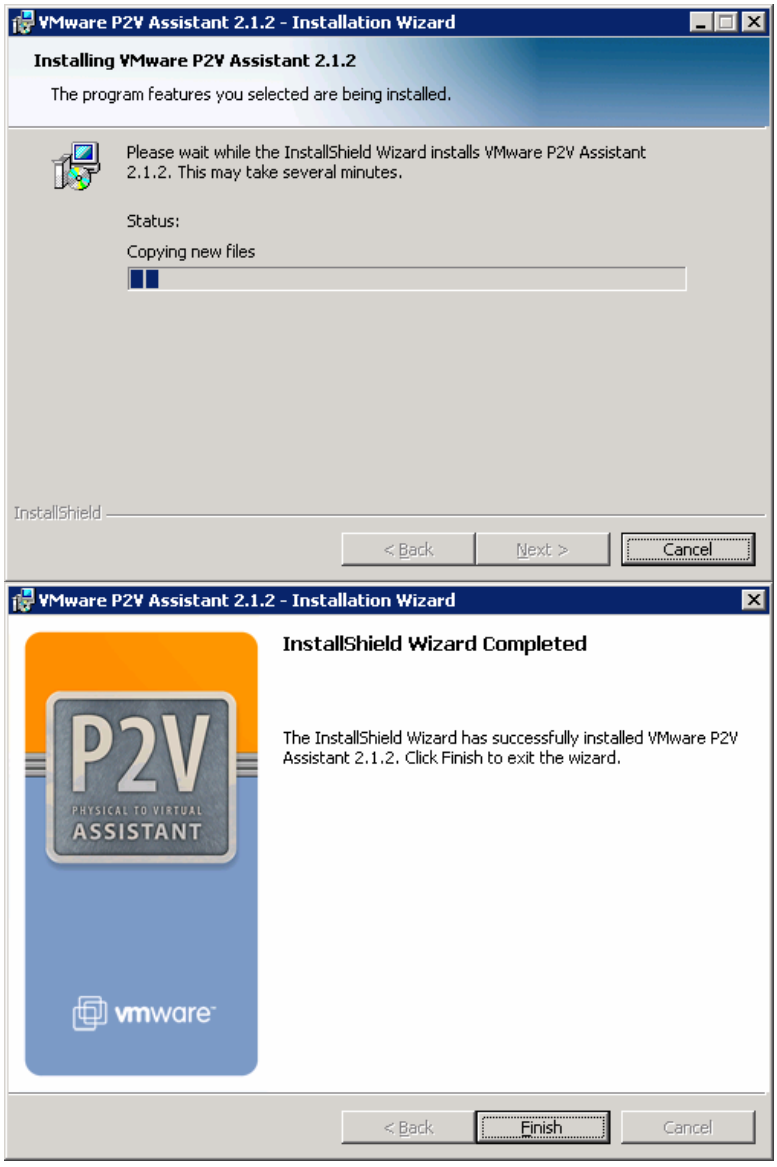

VMware P2V Assistant 2.1.2 - Installation Wizard
License Agreement
Please read the following license agreement carefully.
END USER LICENSE AGREEMENT
FOR VMWARE® P2V ASSISTANT SOFTWARE PRODUCT
VMWARE, INC. LICENSES THIS P2V ASSISTANT SOFTWARE PRODUCT TO YOU SUBJECT TO THE TERMS CONTAINED IN THIS END USER LICENSE AGREEMENT ("EULA"). READ THE TERMS OF THIS EULA CAREFULLY. BY INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE (AS DEFINED BELOW), YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel


VMware P2V Assistant 2.1.2 - Installation Wizard
Customer Information
Please enter your information.
User Name:
BEAVMhelper
Organization:
BEA-VMware
Install this application for:
Anyone who uses this computer (all users)
Only for me (BEAVMBase)
InstallShield
< Back
Next >
Cancel


VMware P2V Assistant 2.1.2 - Installation Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel


VMware P2V Assistant 2.1.2 - Installation Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Click “install” to begin installation process.

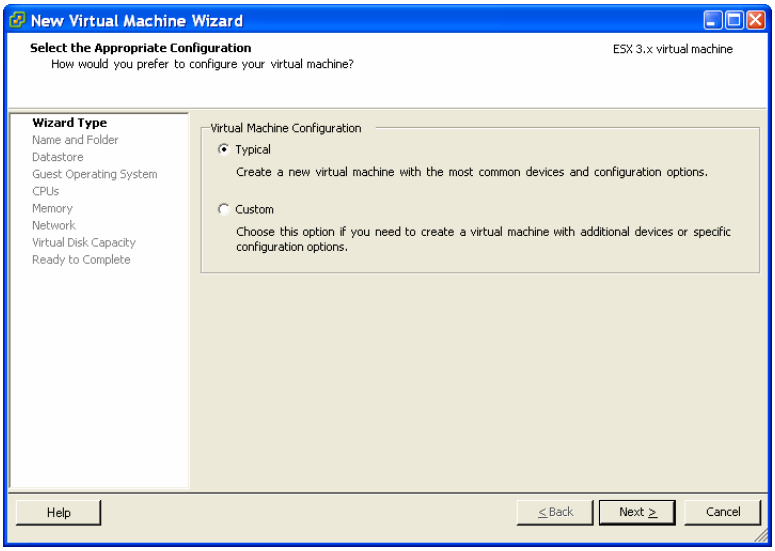

VMware P2V Assistant 2.1.2 - Installation Wizard
Installing VMware P2V Assistant 2.1.2
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs VMware P2V Assistant 2.1.2. This may take several minutes.
Status:
Copying new files
InstallShield
< Back
Next >
Cancel
VMware P2V Assistant 2.1.2 - Installation Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed VMware P2V Assistant 2.1.2. Click Finish to exit the wizard.
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
vmware
< Back
Finish
Cancel

We will now create a VM which will eventually host the migrated virtual BEA WLS environment (virtual disk)

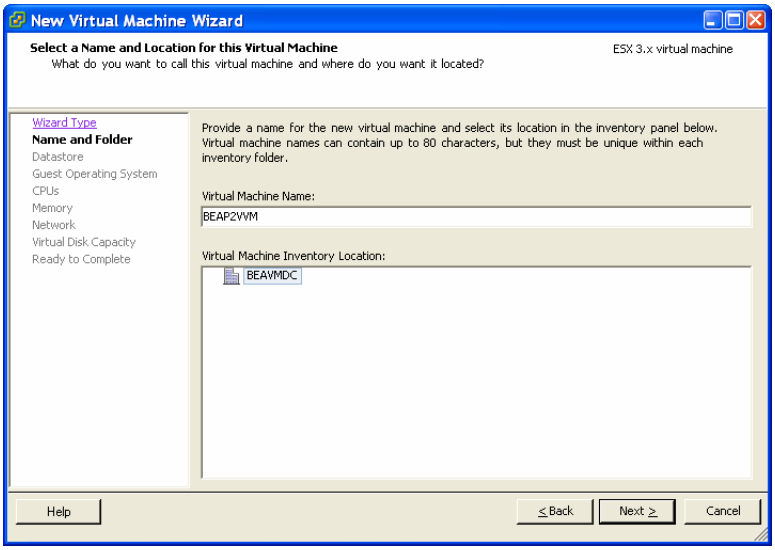
8.2 Creating a Target Virtual Machine

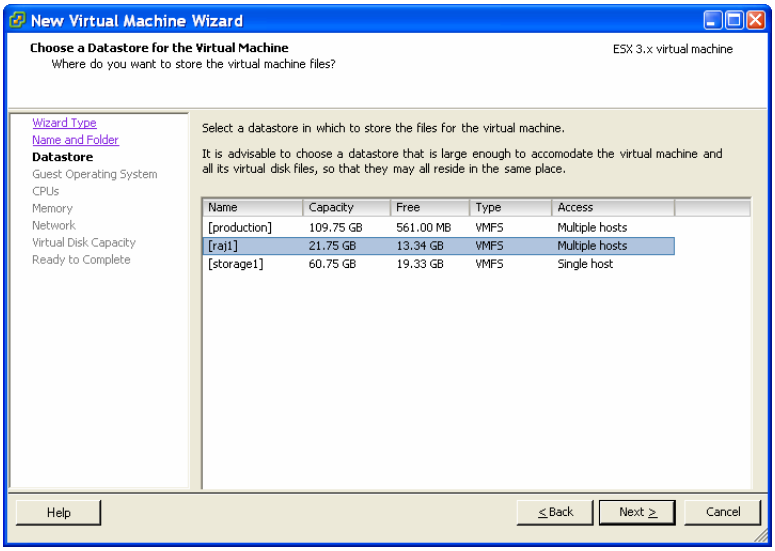
Go to VirtualCenter console and right click on the ESX Server host.

Click on “new Virtual Machines”.

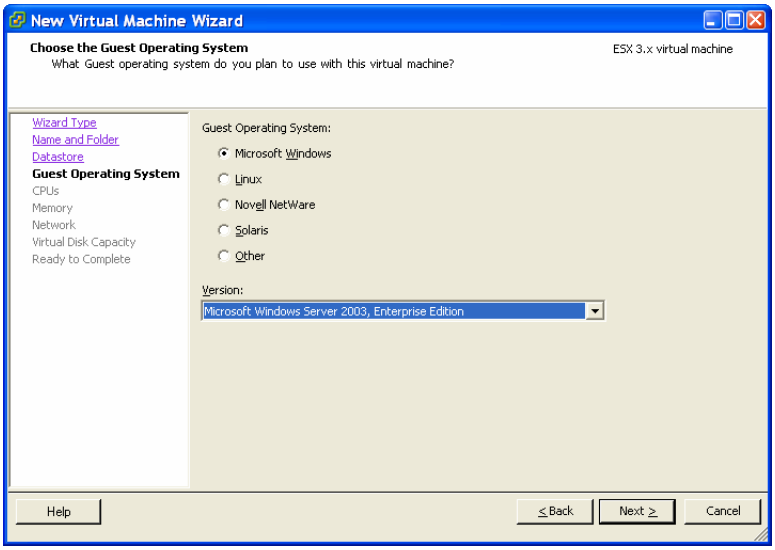


We will create a new virtual machine named BEAP2VVM to host our BEA instance (post P2V).

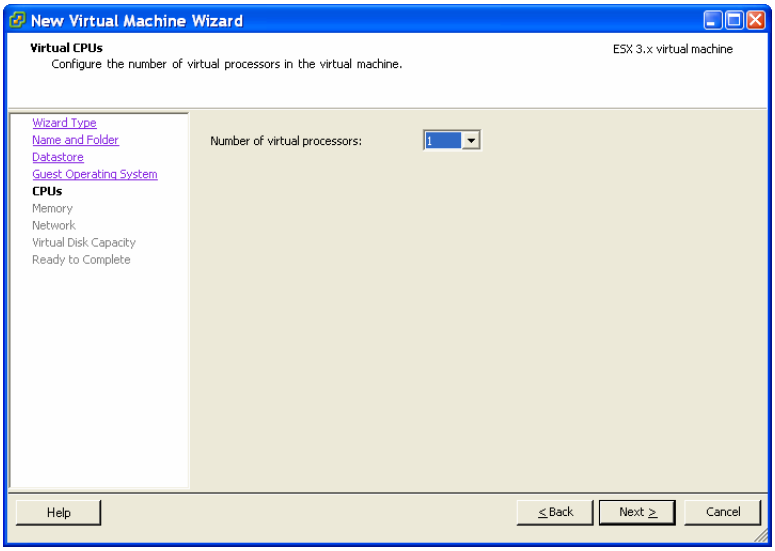

New Virtual Machine Wizard
Select a Name and Location for this Virtual Machine
What do you want to call this virtual machine and where do you want it located?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Provide a name for the new virtual machine and select its location in the inventory panel below.
Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder.
Virtual Machine Name:
BEAP2VVM
Virtual Machine Inventory Location:
BEAVMDC
Help
< Back
Next >
Cancel

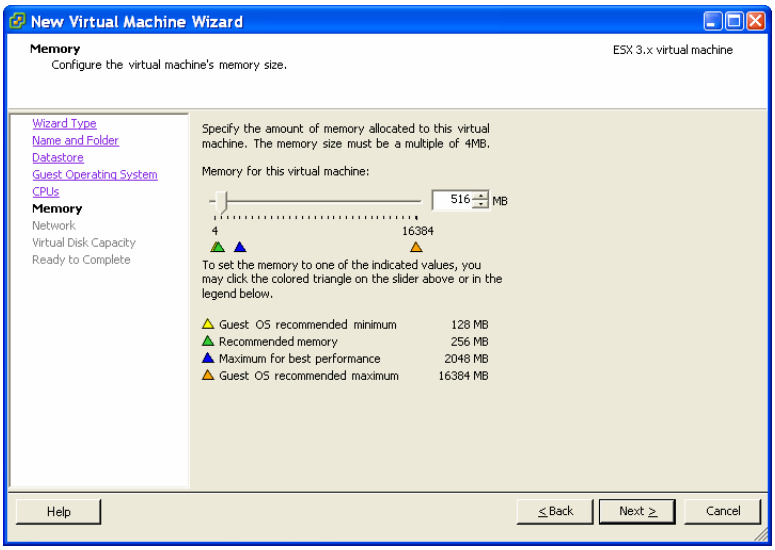

New Virtual Machine Wizard
Choose a Datastore for the Virtual Machine
Where do you want to store the virtual machine files?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Select a datastore in which to store the files for the virtual machine.
It is advisable to choose a datastore that is large enough to accomodate the virtual machine and all its virtual disk files, so that they may all reside in the same place.
Name Capacity Free Type Access
[production] 109.75 GB 561.00 MB VMFS Multiple hosts
[raj1] 21.75 GB 13.34 GB VMFS Multiple hosts
[storage1] 60.75 GB 19.33 GB VMFS Single host
Help
< Back
Next >
Cancel

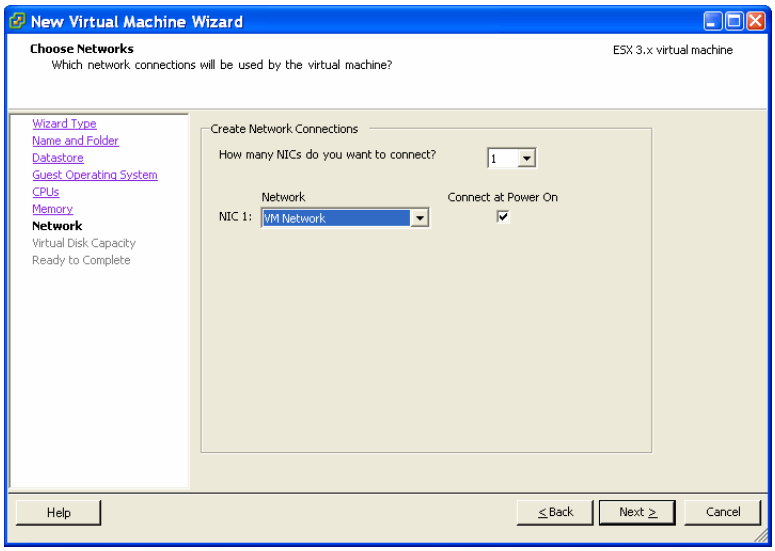
Select storage . We selected “raj1” which was on SAN.

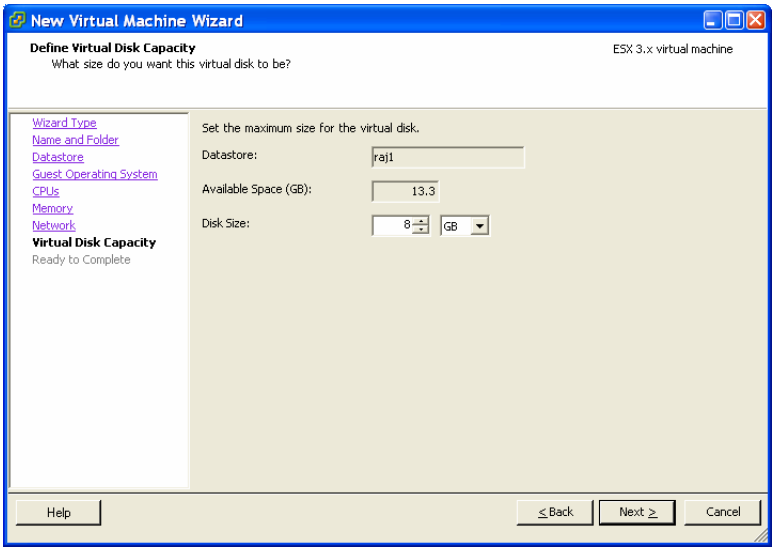


Select the right guest operating system and version for the virtual machine. This needs to match with the source system OS and version.


New Virtual Machine Wizard
Virtual CPUs
Configure the number of virtual processors in the virtual machine.
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Number of virtual processors:
1
Help
< Back
Next >
Cancel

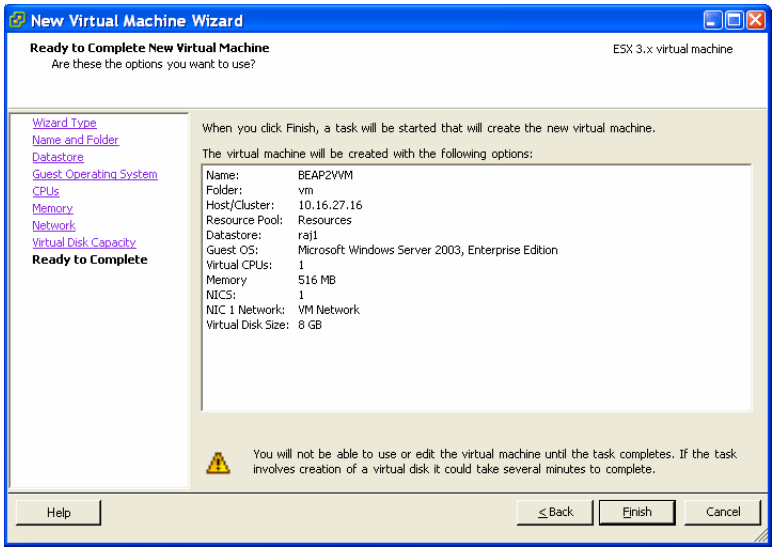

New Virtual Machine Wizard
Memory
Configure the virtual machine's memory size.
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4MB.
Memory for this virtual machine:
516
MB
4
16384
To set the memory to one of the indicated values, you may click the colored triangle on the slider above or in the legend below.
Guest OS recommended minimum 128 MB
Recommended memory 256 MB
Maximum for best performance 2048 MB
Guest OS recommended maximum 16384 MB
Help
< Back
Next >
Cancel


New Virtual Machine Wizard
Choose Networks
Which network connections will be used by the virtual machine?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
Create Network Connections
How many NICs do you want to connect?
1
Network
Connect at Power On
NIC 1:
VM Network
Help
< Back
Next >
Cancel

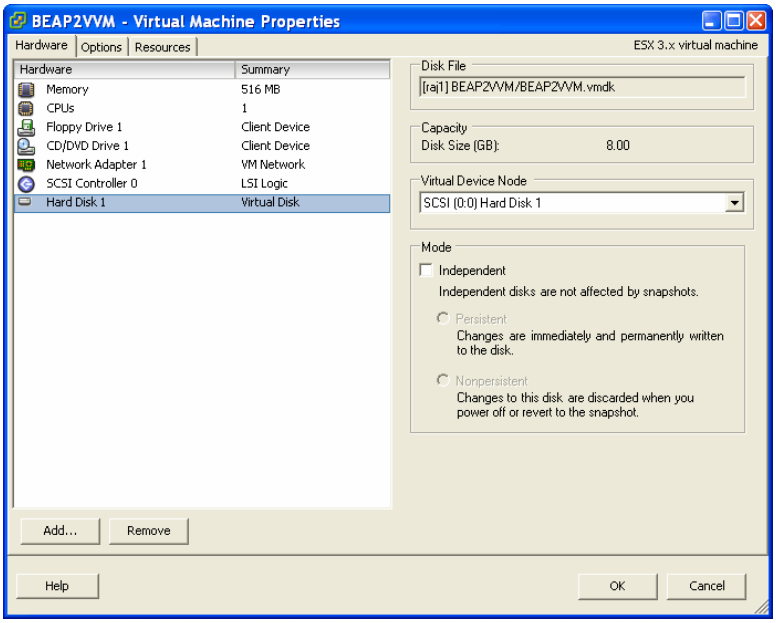


Size of disk should be equal to source disk size (here we took 8GB).

Note that P2V cloning copies only the files (actual data) and not the entire disk. But it is a recommended best practice to keep the size of the target disk(s) the same as the source disk(s).


New Virtual Machine Wizard
Ready to Complete New Virtual Machine
Are these the options you want to use?
ESX 3.x virtual machine
Wizard Type
Name and Folder
Datastore
Guest Operating System
CPUs
Memory
Network
Virtual Disk Capacity
Ready to Complete
When you click Finish, a task will be started that will create the new virtual machine.
The virtual machine will be created with the following options:
Name: BEAP2VVM
Folder: vm
Host/Cluster: 10.16.27.16
Resource Pool: Resources
Datastore: raj1
Guest OS: Microsoft Windows Server 2003, Enterprise Edition
Virtual CPUs: 1
Memory 516 MB
NICS: 1
NIC 1 Network: VM Network
Virtual Disk Size: 8 GB
You will not be able to use or edit the virtual machine until the task completes. If the task involves creation of a virtual disk it could take several minutes to complete.
Help
< Back
Finish
Cancel

Note down the path of the blank virtual disk created during the VM creation above.

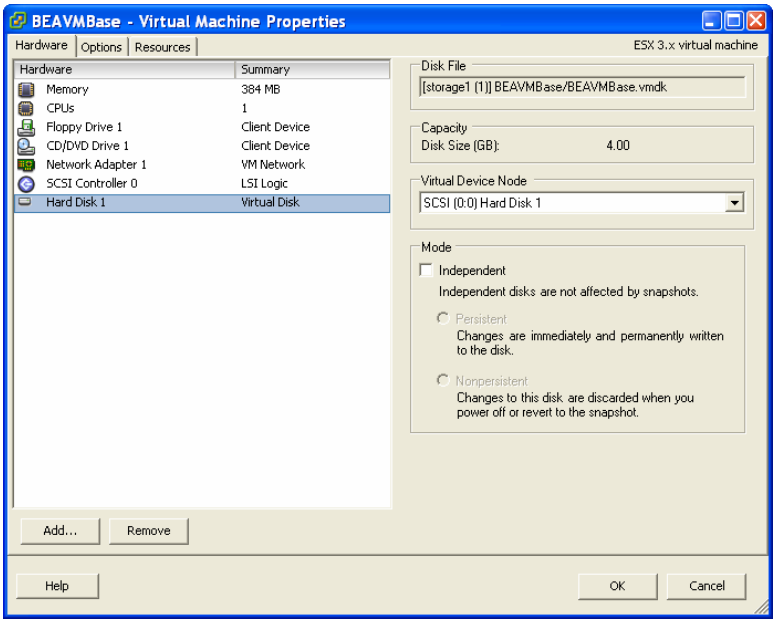


8.3 Adding Target Virtual Disk to Helper VM

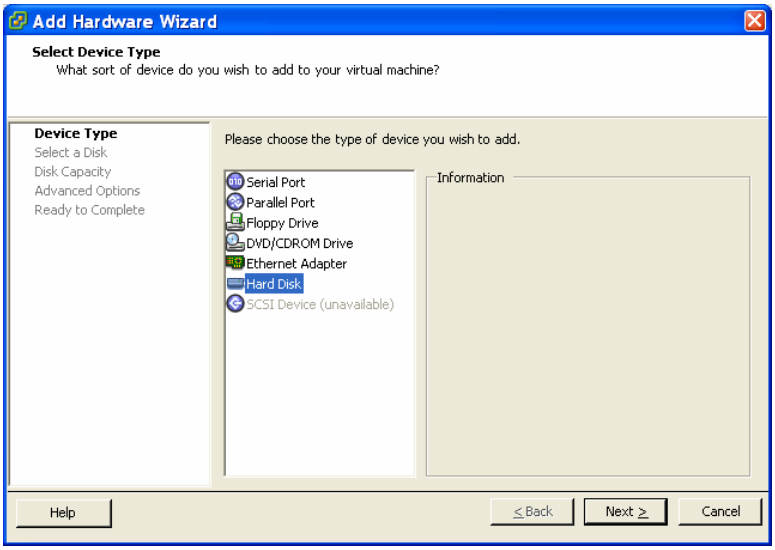
Add the blank virtual disk created to the helper VM (in our case, BEAVMBase) as a second virtual disk.

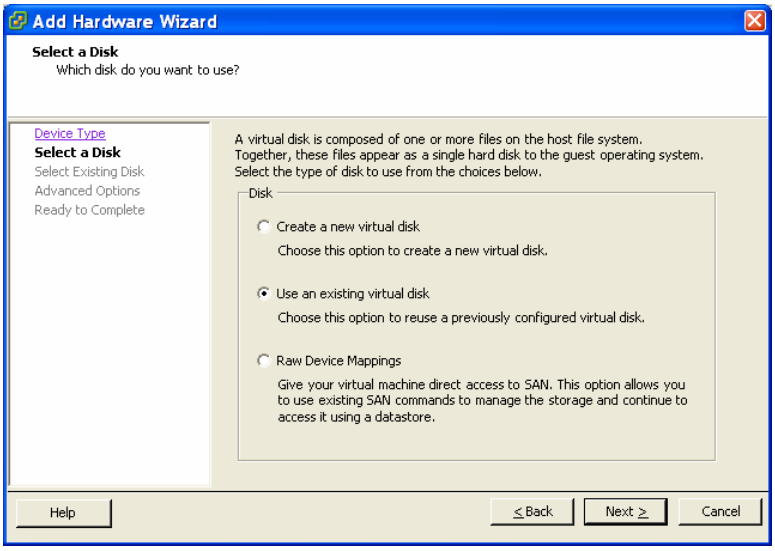
Shutdown helper VM (BEAVMBase).

Right click on BEAVMBase → edit settings → Hard Disk1

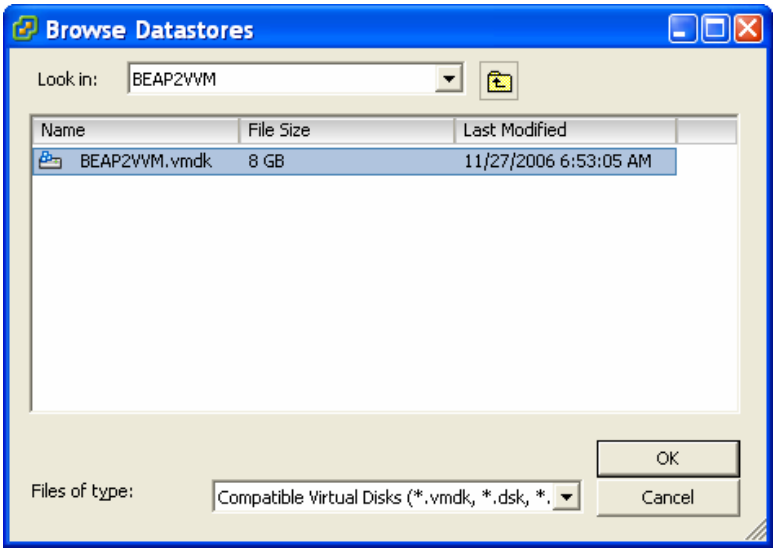


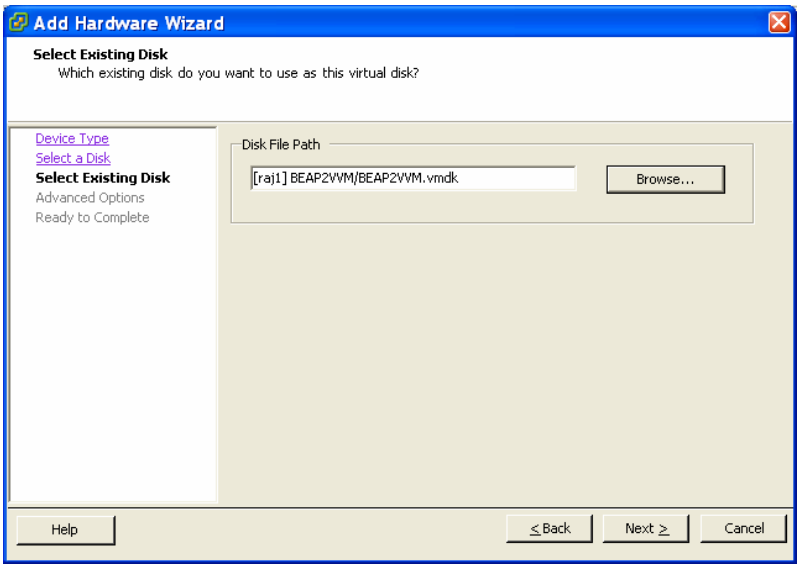
Click “Add” to add a new virtual disk to the VM.

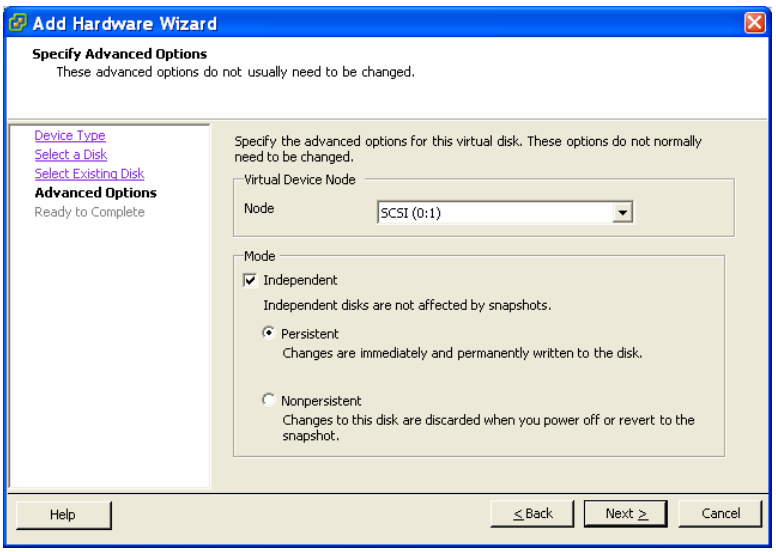



Add Hardware Wizard
Select a Disk
Which disk do you want to use?
Device Type
Select a Disk
Select Existing Disk
Advanced Options
Ready to Complete
A virtual disk is composed of one or more files on the host file system.
Together, these files appear as a single hard disk to the guest operating system.
Select the type of disk to use from the choices below.
Disk
Create a new virtual disk
Choose this option to create a new virtual disk.
Use an existing virtual disk
Choose this option to reuse a previously configured virtual disk.
Raw Device Mappings
Give your virtual machine direct access to SAN. This option allows you to use existing SAN commands to manage the storage and continue to access it using a datastore.
Help
< Back
Next >
Cancel

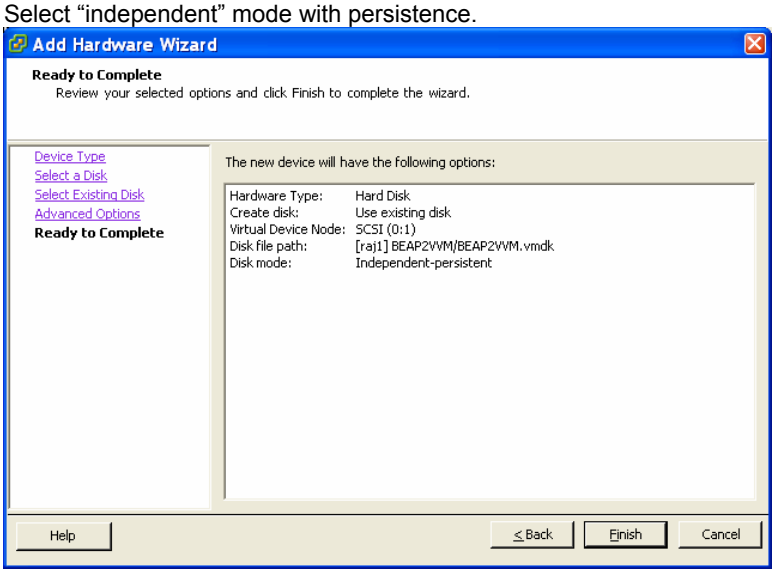
Select “use an existing virtual disk” and browse to the datastore directory where the BEAP2VVM disk is located.

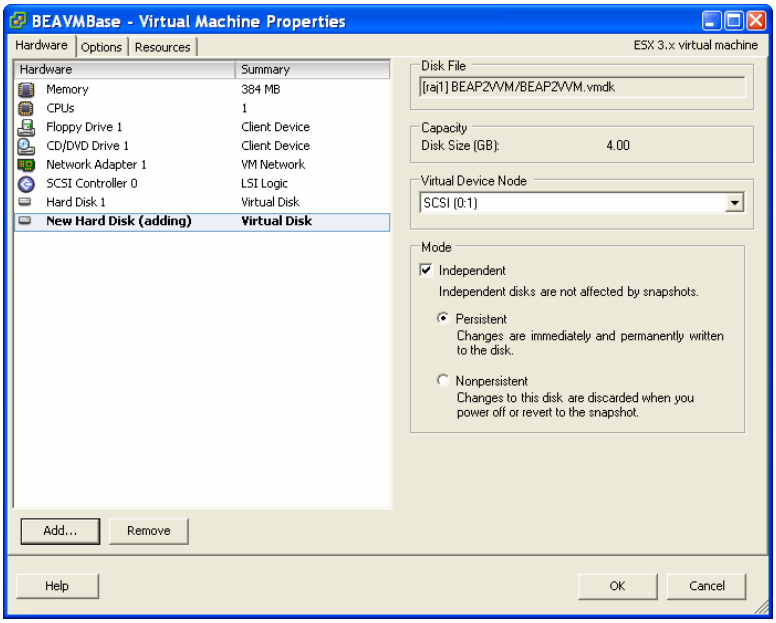

Browse Datastores
Look in:
BEAP2VVM
Name
File Size
Last Modified
BEAP2VVM.vmdk
8 GB
11/27/2006 6:53:05 AM
Files of type:
Compatible Virtual Disks (*.vmdk, *.dsk, *.
OK
Cancel


Add Hardware Wizard
Select Existing Disk
Which existing disk do you want to use as this virtual disk?
Device Type
Select a Disk
Select Existing Disk
Advanced Options
Ready to Complete
Disk File Path
[raj1] BEAP2VVM/BEAP2VVM.vmdk
Browse...
Help
< Back
Next >
Cancel


Add Hardware Wizard
Specify Advanced Options
These advanced options do not usually need to be changed.
Device Type
Select a Disk
Select Existing Disk
Advanced Options
Ready to Complete
Specify the advanced options for this virtual disk. These options do not normally need to be changed.
Virtual Device Node
Node
SCSI (0:1)
Mode
Independent
Independent disks are not affected by snapshots.
Persistent
Changes are immediately and permanently written to the disk.
Nonpersistent
Changes to this disk are discarded when you power off or revert to the snapshot.
Help
< Back
Next >
Cancel

Select “independent” mode with persistence.





Click ok.

Power on the helper VM.

8.4 Source System Preparation

Shutdown the physical system hosting the BEA WLS managed server and reboot the system using the P2V Assistant 2.1.2 boot CD.

You should see the boot prompt. Press “enter”.

Press “ok” on the welcome screen.

Select the source disk(s) involved and the network interface used to access the system.

If the disks are connected by Fibre Channel, select “yes” when prompted for loading FC drivers.

You have the option of providing DHCP or Static IP.

Provide the required network information.
Ex: our IP was 10.16.27.20 and TCP Port: 7000

Press OK.

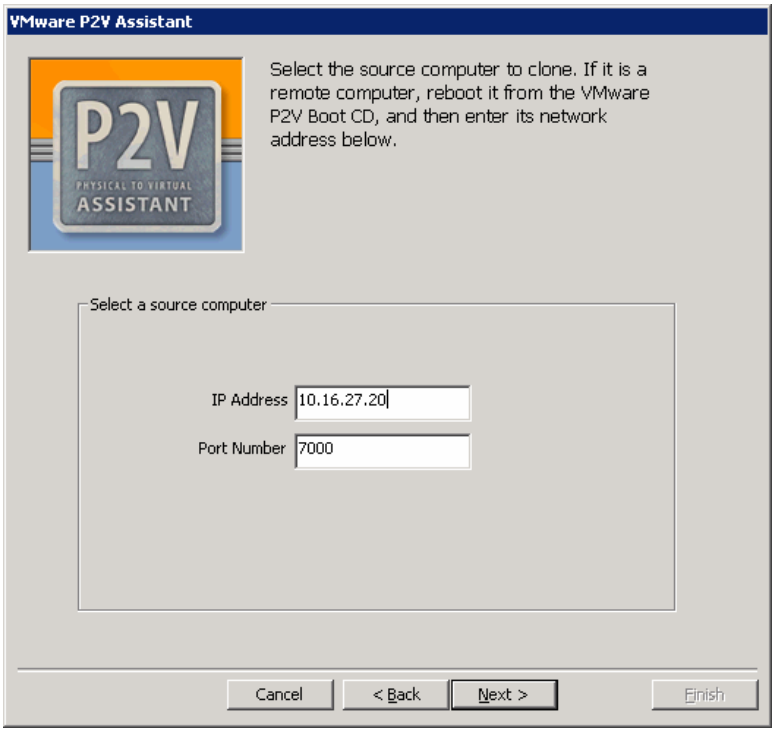
You should see a summary of the network settings. Leave the source system at this state. You should now be able to “ping” the IP address from the network.

8.5 Cloning Source Disk to Virtual Disk

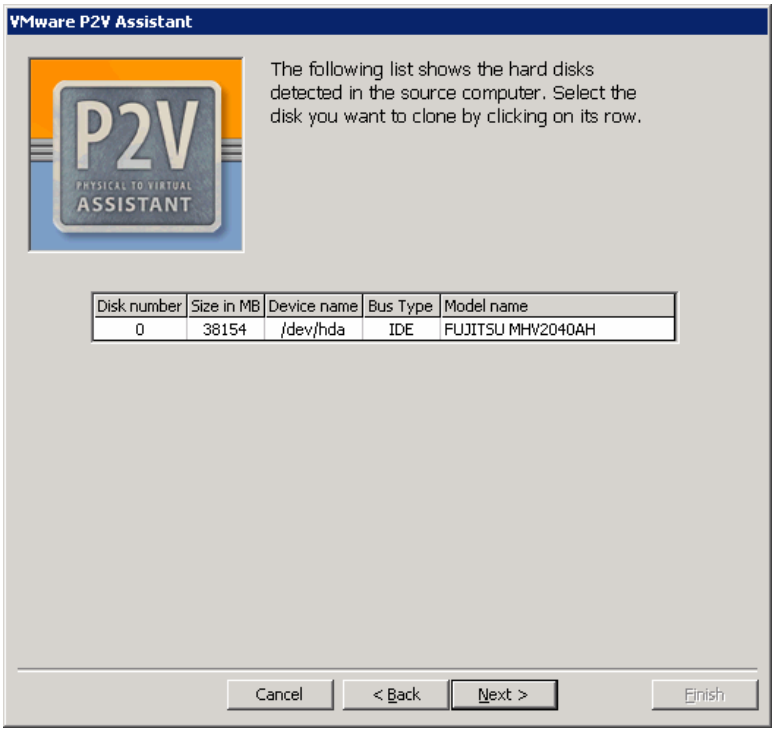
Start the P2V assistant on the helper VM.

Note: if you have not added licenses for P2V, you will be prompted at this point.

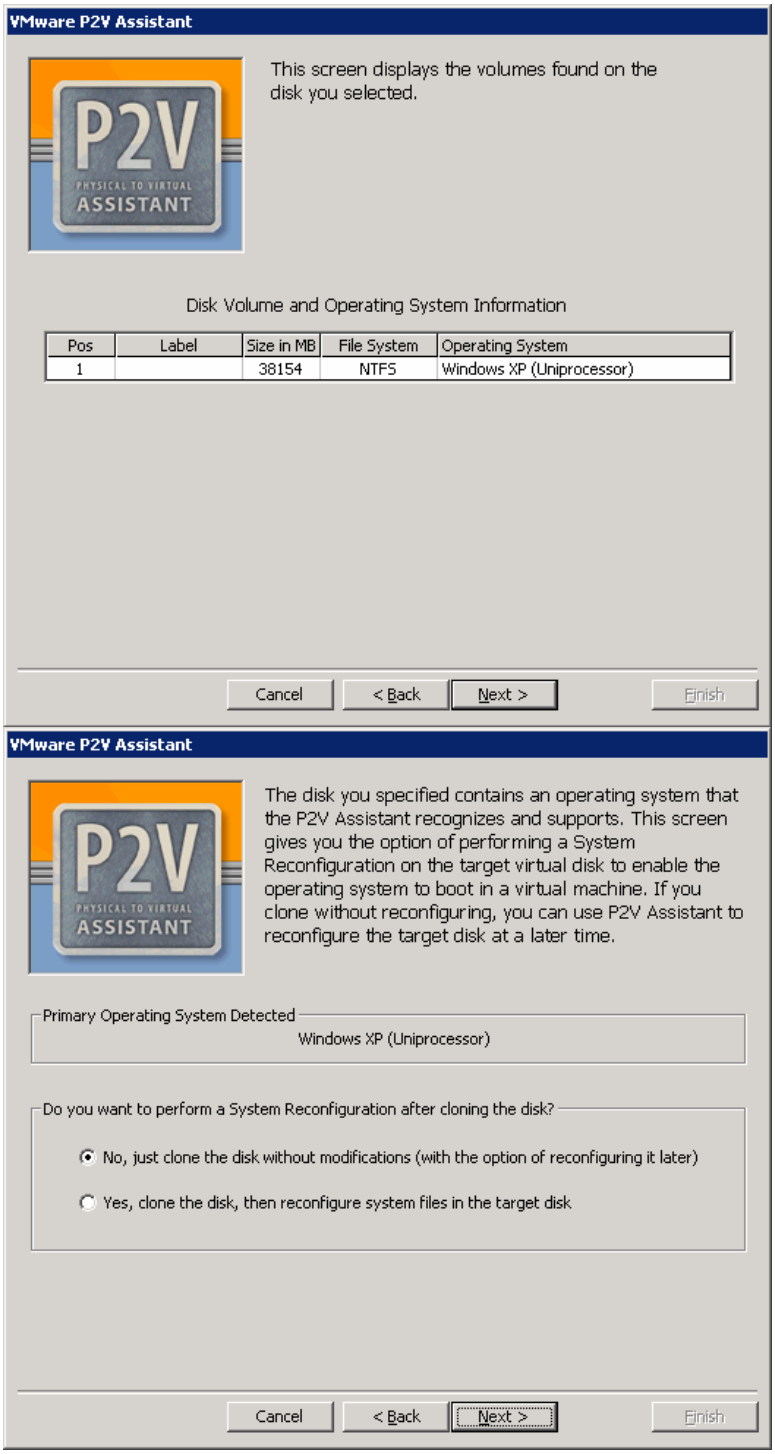
VMware P2V Assistant
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
Welcome to VMware Physical to Virtual (P2V) Assistant.
This application helps you migrate a physical computer
to a virtual machine.
Select a task
Perform a System Reconfiguration on an existing virtual disk that contains an operating system
Clone a source computer's physical disk to a virtual disk and optionally perform a System Reconfiguration on the virtual disk
Version and License Info...
Cancel
< Back
Next >
Finish


VMware P2V Assistant
Select the source computer to clone. If it is a remote computer, reboot it from the VMware P2V Boot CD, and then enter its network address below.
Select a source computer
IP Address
10.16.27.20
Port Number
7000
Cancel
< Back
Next >
Finish

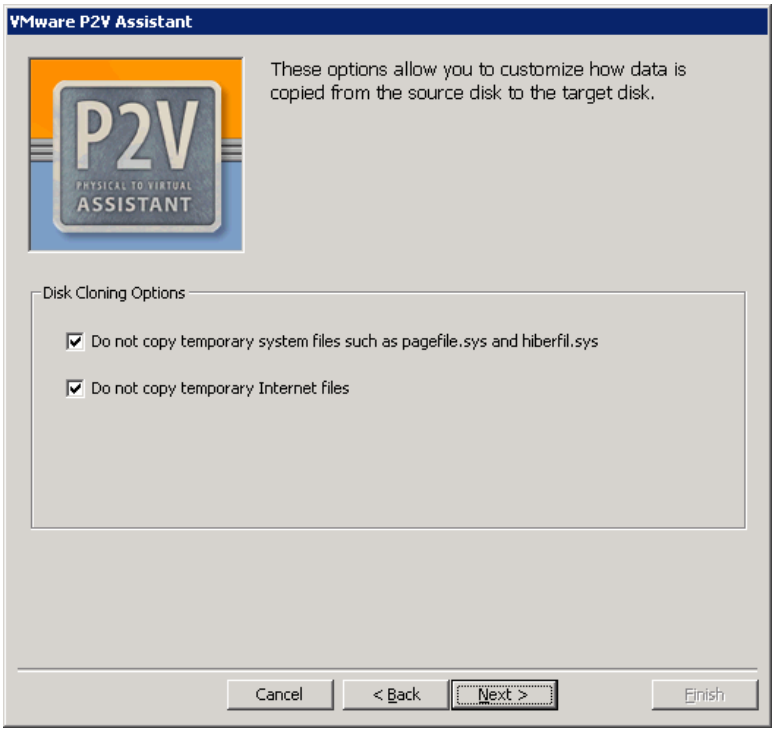
Give the IP address you just configured on the source machine.

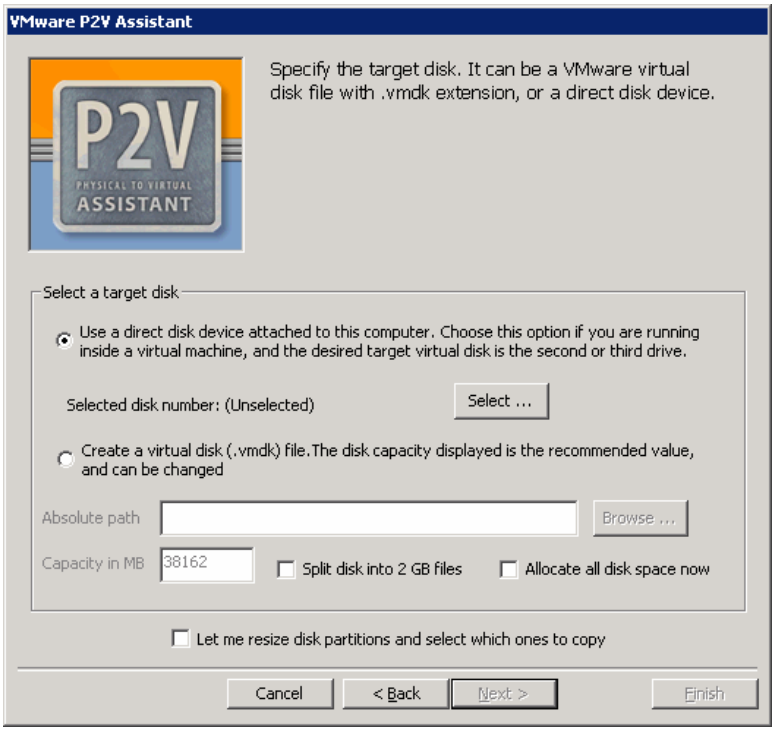


Select the hard disk that needs to be cloned (we were using only c:\).


VMware P2V Assistant
This screen displays the volumes found on the disk you selected.
Disk Volume and Operating System Information
Pos
Label
Size in MB
File System
Operating System
1
38154
NTFS
Windows XP (Uniprocessor)
Cancel
< Back
Next >
Finish
VMware P2V Assistant
The disk you specified contains an operating system that the P2V Assistant recognizes and supports. This screen gives you the option of performing a System Reconfiguration on the target virtual disk to enable the operating system to boot in a virtual machine. If you clone without reconfiguring, you can use P2V Assistant to reconfigure the target disk at a later time.
Primary Operating System Detected
Windows XP (Uniprocessor)
Do you want to perform a System Reconfiguration after cloning the disk?
No, just clone the disk without modifications (with the option of reconfiguring it later)
Yes, clone the disk, then reconfigure system files in the target disk
Cancel
< Back
Next >
Finish

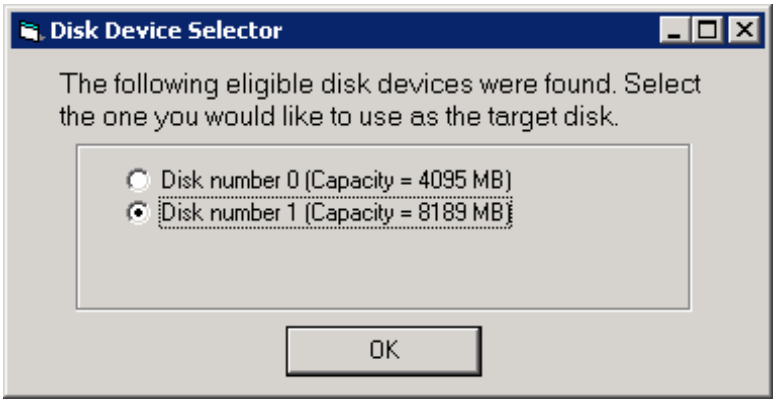
We will perform “reconfiguration” later. So, just select “clone disk without modifications”


VMware P2V Assistant
These options allow you to customize how data is copied from the source disk to the target disk.
Disk Cloning Options
Do not copy temporary system files such as pagefile.sys and hiberfil.sys
Do not copy temporary Internet files
Cancel
< Back
Next >
Finish

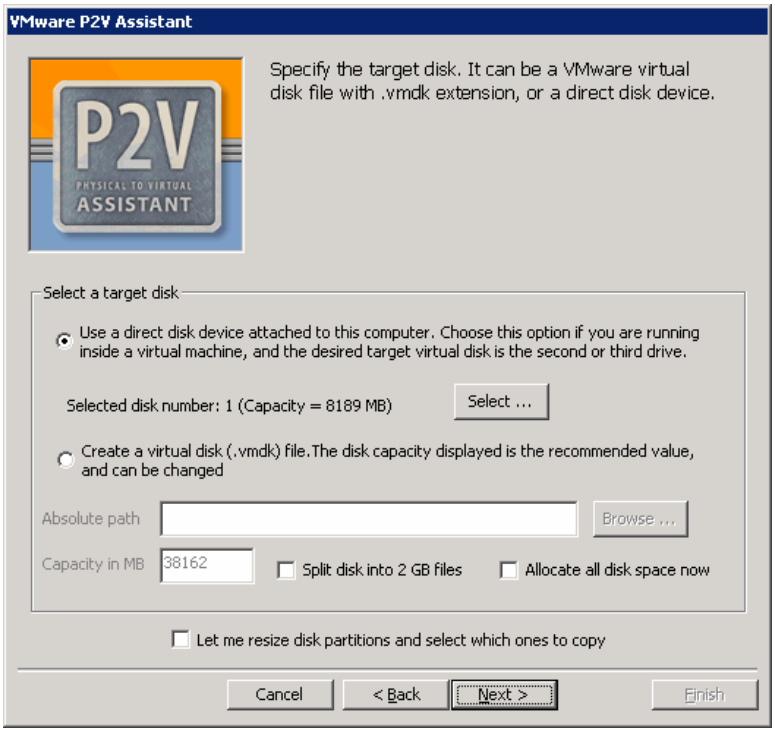

VMware P2V Assistant
Specify the target disk. It can be a VMware virtual disk file with .vmdk extension, or a direct disk device.
Select a target disk
Use a direct disk device attached to this computer. Choose this option if you are running inside a virtual machine, and the desired target virtual disk is the second or third drive.
Selected disk number: (Unselected)
Select ...
Create a virtual disk (.vmdk) file. The disk capacity displayed is the recommended value, and can be changed
Absolute path
Browse ...
Capacity in MB
38162
Split disk into 2 GB files
Allocate all disk space now
Let me resize disk partitions and select which ones to copy
Cancel
< Back
Next >
Finish

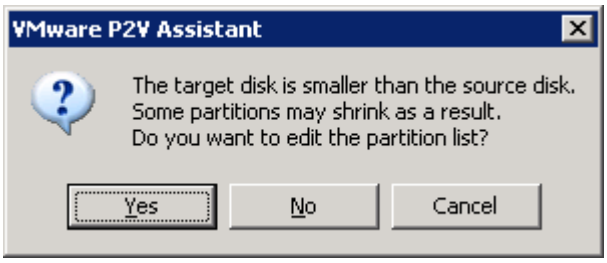
We want to use the 2nd virtual disk of 8GB we attached to the helper VM as our target disk. So select “use a direct disk device”.

Then click “select” to choose the disk drive.


Disk Device Selector
The following eligible disk devices were found. Select the one you would like to use as the target disk.
Disk number 0 (Capacity = 4095 MB)
Disk number 1 (Capacity = 8189 MB)
OK

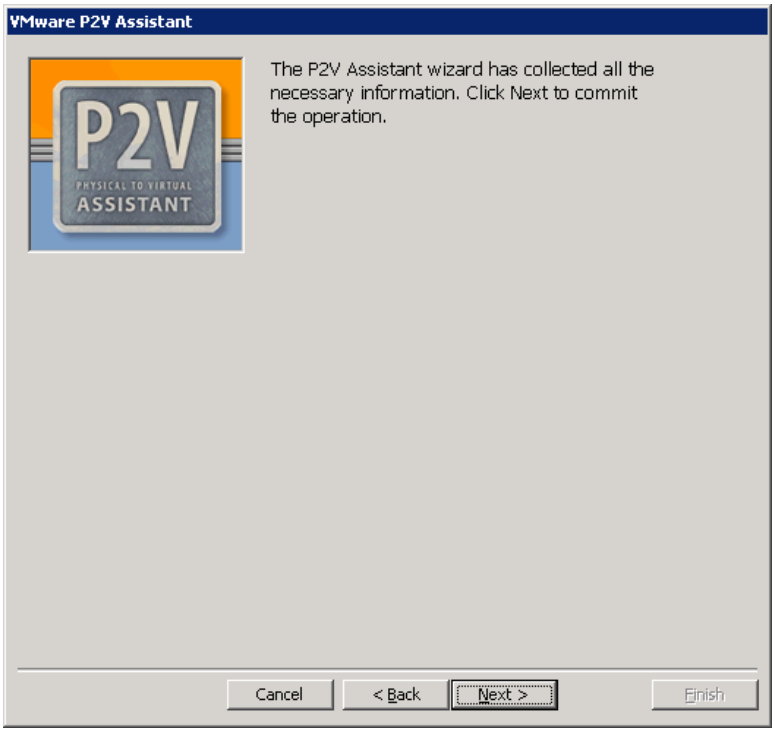
We select the 2nd disk (disk number 1).

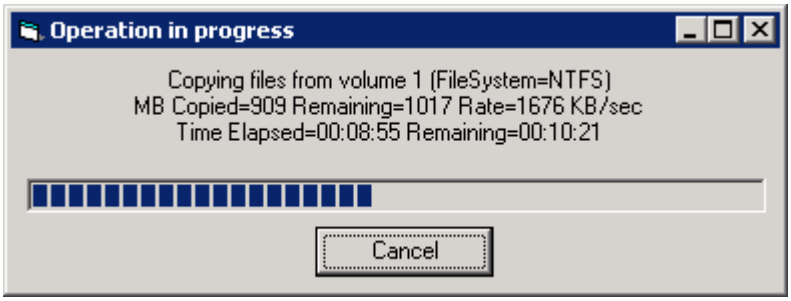

VMware P2V Assistant
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
Specify the target disk. It can be a VMware virtual disk file with .vmdk extension, or a direct disk device.
Select a target disk
Use a direct disk device attached to this computer. Choose this option if you are running inside a virtual machine, and the desired target virtual disk is the second or third drive.
Selected disk number: 1 (Capacity = 8189 MB)
Select ...
Create a virtual disk (.vmdk) file. The disk capacity displayed is the recommended value, and can be changed
Absolute path
Browse ...
Capacity in MB
38162
Split disk into 2 GB files
Allocate all disk space now
Let me resize disk partitions and select which ones to copy
Cancel
< Back
Next >
Finish

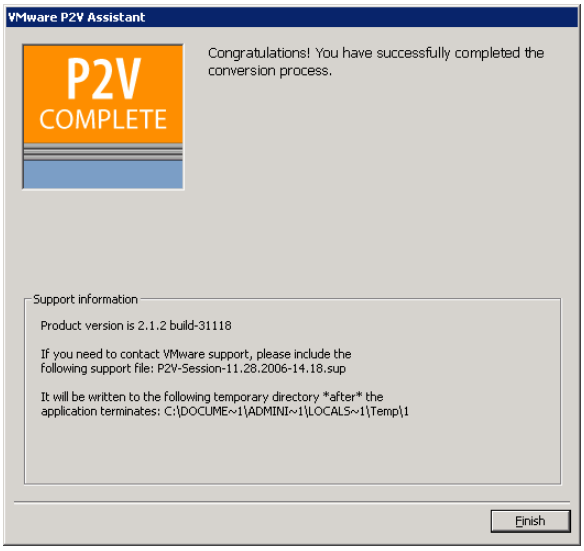

VMware P2V Assistant
The target disk is smaller than the source disk.
Some partitions may shrink as a result.
Do you want to edit the partition list?
Yes
No
Cancel

Click “No”.

Note: it is recommended to create a virtual disk of the same size as the physical disk that is being cloned even though only the data is copied over during P2V clone process.


VMware P2V Assistant
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
The P2V Assistant wizard has collected all the necessary information. Click Next to commit the operation.
Cancel
< Back
Next >
Finish


Operation in progress
Copying files from volume 1 (FileSystem=NTFS)
MB Copied=909 Remaining=1017 Rate=1676 KB/sec
Time Elapsed=00:08:55 Remaining=00:10:21
Cancel


VMware P2V Assistant
P2V
COMPLETE
Congratulations! You have successfully completed the conversion process.
Support information
Product version is 2.1.2 build-31118
If you need to contact VMware support, please include the following support file: P2V-Session-11.28.2006-14.18.sup
It will be written to the following temporary directory *after* the application terminates: C:\DOCUME~1\ADMINI~1\LOCALS~1\Temp\1
Finish

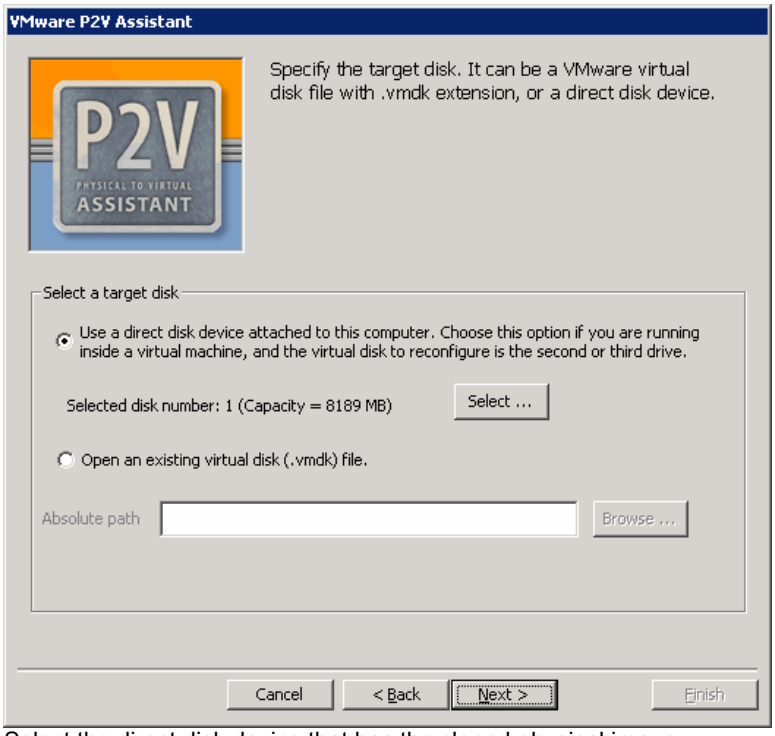
8.6 Reconfiguration of Cloned Virtual Disk

Use the VMware P2V Assistant to reconfigure a cloned disk so it can be used as a bootable system disk in a virtual machine.

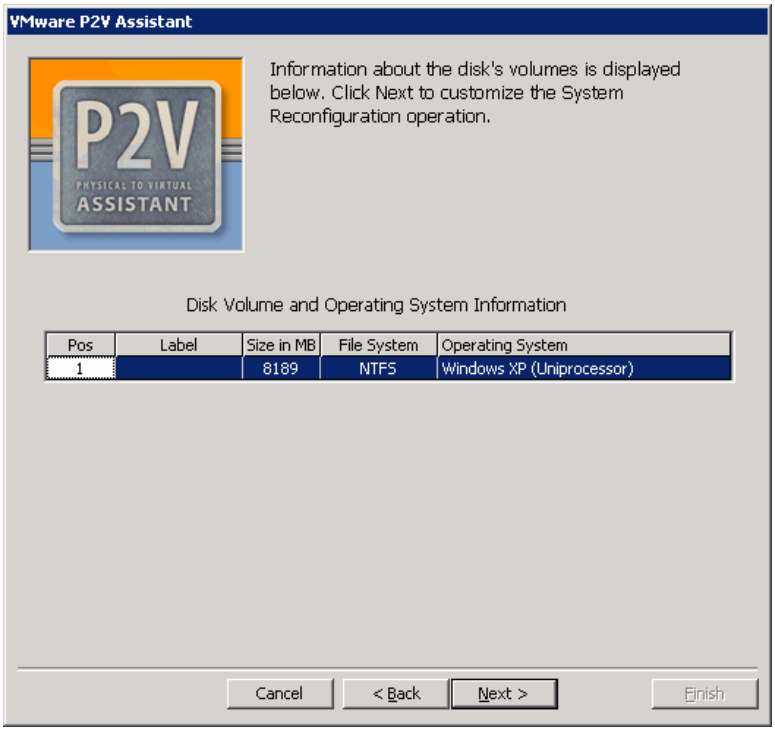
Start P2V Assistant on the helper VM.

VMware P2V Assistant
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
Welcome to VMware Physical to Virtual (P2V) Assistant.
This application helps you migrate a physical computer to a virtual machine.
Select a task
Perform a System Reconfiguration on an existing virtual disk that contains an operating system
Clone a source computer's physical disk to a virtual disk and optionally perform a System Reconfiguration on the virtual disk
Version and License Info...
Cancel
< Back
Next >
Finish

Select “perform a system reconfiguration of existing virtual disk”.

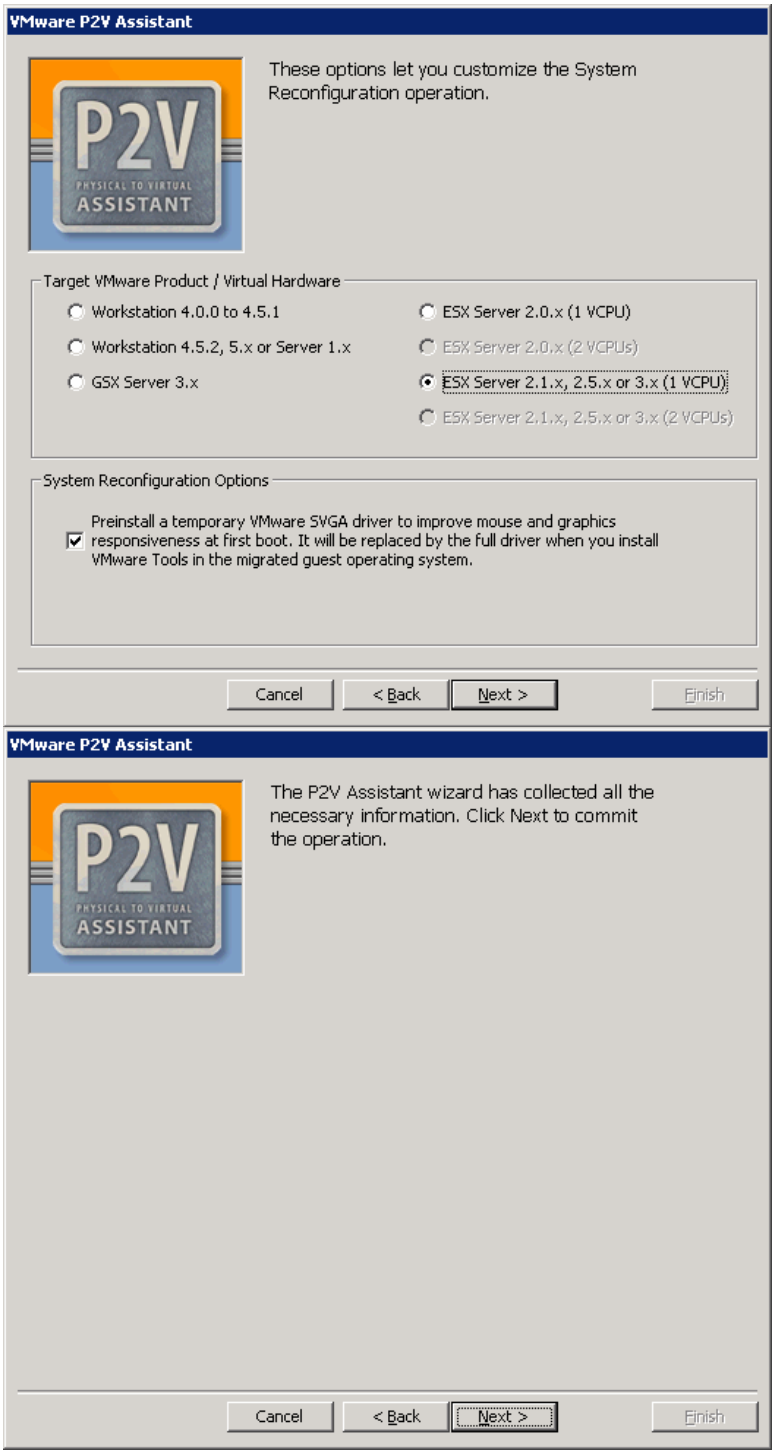

VMware P2V Assistant
P2V
PHYSICAL TO VIRTUAL
ASSISTANT
Specify the target disk. It can be a VMware virtual disk file with .vmdk extension, or a direct disk device.
Select a target disk
Use a direct disk device attached to this computer. Choose this option if you are running inside a virtual machine, and the virtual disk to reconfigure is the second or third drive.
Selected disk number: 1 (Capacity = 8189 MB)
Select ...
Open an existing virtual disk (.vmdk) file.
Absolute path
Browse ...
Cancel
< Back
Next >
Finish

Select the direct disk device that has the cloned physical image.

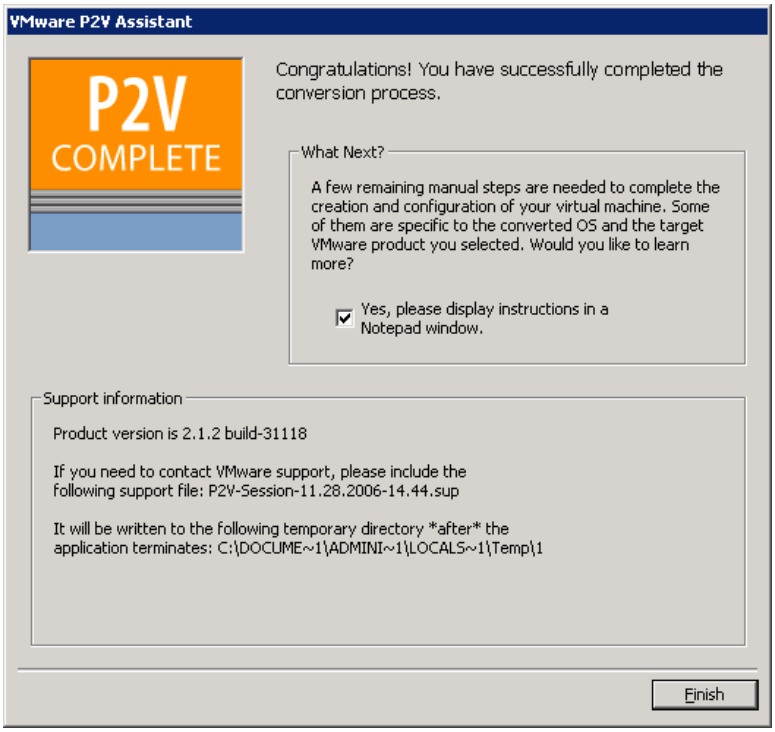


Select “ESX 2.1.x, 2.5.x or 3.x (2VCPUs) “.

Also select the system reconfiguration options


VMware P2V Assistant
These options let you customize the System Reconfiguration operation.
Target VMware Product / Virtual Hardware
Workstation 4.0.0 to 4.5.1
Workstation 4.5.2, 5.x or Server 1.x
GSX Server 3.x
ESX Server 2.0.x (1 VCPU)
ESX Server 2.0.x (2 VCPUs)
ESX Server 2.1.x, 2.5.x or 3.x (1 VCPU)
ESX Server 2.1.x, 2.5.x or 3.x (2 VCPUs)
System Reconfiguration Options
Preinstall a temporary VMware SVGA driver to improve mouse and graphics responsiveness at first boot. It will be replaced by the full driver when you install VMware Tools in the migrated guest operating system.
Cancel
< Back
Next >
Finish
VMware P2V Assistant
The P2V Assistant wizard has collected all the necessary information. Click Next to commit the operation.
Cancel
< Back
Next >
Finish

Click “next”. This will update the registry and reconfigure the operating system on the virtual disk.

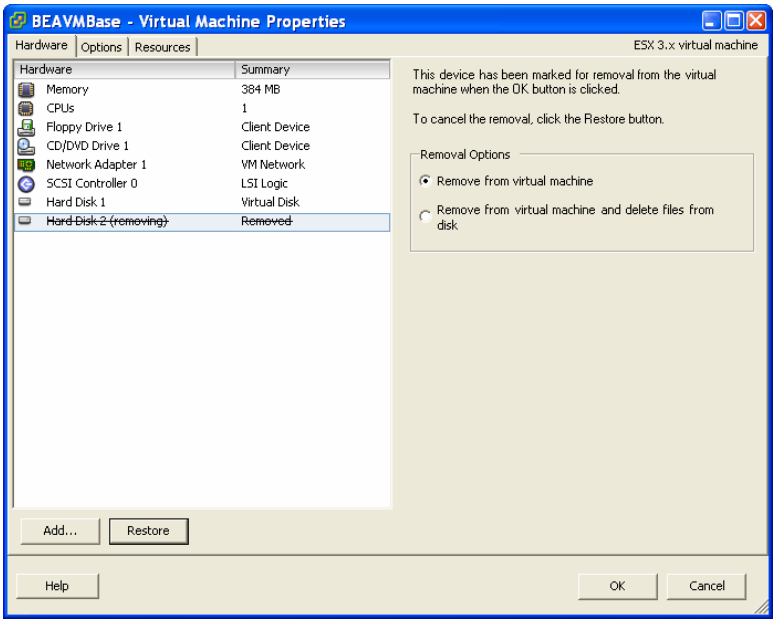

VMware P2V Assistant
P2V
COMPLETE
Congratulations! You have successfully completed the conversion process.
What Next?
A few remaining manual steps are needed to complete the creation and configuration of your virtual machine. Some of them are specific to the converted OS and the target VMware product you selected. Would you like to learn more?
Yes, please display instructions in a Notepad window.
Support information
Product version is 2.1.2 build-31118
If you need to contact VMware support, please include the following support file: P2V-Session-11.28.2006-14.44.sup
It will be written to the following temporary directory *after* the application terminates: C:\DOCUME~1\ADMINI~1\LOCALS~1\Temp\1
Finish

You have completed reconfiguring a system on the cloned virtual disk using VMware P2V Assistant

8.7 Booting Target VM with Cloned Virtual Disk

Shutdown the helper virtual machine from the VI client.

Right click on the helper VM → edit settings → hard disk 2

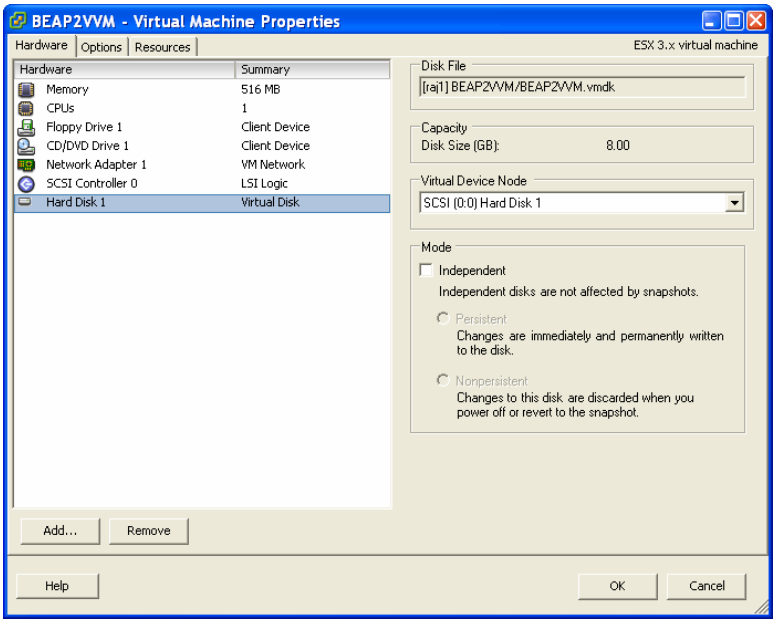


Click “remove”

Make sure to select “remove disk from virtual machine”

Go to the target virtual machine (BEAP2VVM) that was already created earlier in the P2V exercise.

Right Click to select “Edit settings” to confirm that hard disk 1 is pointing to the right disk file.



“Power On” the target (BEAP2VVM) virtual machine.

Note: make sure your physical system that was cloned is not on the network, else you will have a network address clash. You can always change the IP address of the physical (source) system later if you want to bring it up again and re-provision it for other purposes.

Look for any errors while the system boots. The system should start up successfully. Before proceeding to login, make sure to install VMware tools.

Check the P2V documentation to confirm if any post boot up steps (cleanups, configuration etc.) are required for your specific OS version. If there are any services that fail to start during boot, check the event log viewer for details. Windows 2003 Server is quite successful in configuring all needed drivers on boot up and might request you to reboot upon startup.

Also ensure that your host name and IP address are configured correctly and is the same as the physical system. Now start your BEA WLS instance from the “admin server” console.

At this point, we have successfully migrated a BEA WLS instance from a physical server to a virtual machine. Repeat this procedure to migrate all your BEA components from physical servers to virtual machines running on VMware Infrastructure.

Appendix A: VMware Migration for a BEA WebLogic Application Server Virtual Machine

Moving a virtual machine from one host to another is called migration. Migrating a powered-on virtual machine is called “Live migration with VMotion”. Migration with VMotion, designed to be used between compatible systems, allows you to migrate virtual machines with no downtime and zero disruption to end users but requires VMotion licensing and specific configuration.

You can perform the following types of migration of virtual machines (VM):

1. Cold Migration: VM Migration in powered-off or suspended state.
    a. If the VM files are on Shared storage (SAN, iSCSI or NAS), only configuration files are moved with no disk movement.
    b. Relocation: When VM files are not on SAN (Ex: local storage) and needs to be moved to another storage destination or ESX Server host.
2. Live Migration with VMotion: Moving a virtual machine that is powered on with online applications. The VM files should be located on shared storage and accessible by both the source and destination ESX Server hosts.

VMotion allows working processes to continue throughout the migration process. The entire state of the virtual machine as well as its configuration file, if necessary, are moved to the new host even while the data storage remains in the same location on the SAN. The associated virtual disk remains in the same location on the SAN storage that is shared between the two hosts. Once the configuration file is migrated to the alternate host, the virtual machine runs on the new host.

The state information includes the current memory content and all the information that defines and identifies the virtual machine. The memory content includes transaction data and whatever bits of the operating system and applications are in the memory. The defining and identification information stored in the state includes all the data that maps to the virtual machine hardware elements, such as BIOS, devices, CPU, MAC addresses for the Ethernet cards, chip set states, registers, and so forth.

Migration with VMotion takes place in 3 distinct stages:

1. When Migration with VMotion is requested, VirtualCenter verifies that the existing VM is in a stable state with its current host.
2. The VM state information (memory, registers, network etc.) is copied to the target host.
3. The VM resumes its activities on the new host.

If any error occurs during migration, the virtual machines revert to their original states and locations. Virtual machines can be moved between hosts within the same datacenter. Virtual machines cannot be moved between datacenters.

The VMkernel networking stack must be set up properly to accommodate VMotion.

The network services provided by the VMkernel (iSCSI, NFS, and VMotion) use a TCP/IP stack in the VMkernel. This TCP/IP stack is completely separate from the TCP/IP stack used in the service console. Each of these TCP/IP stacks accesses various networks by attaching to one or more port groups on one or more vSwitches.

VMotion Requirements

Shared Storage
Ensure that the managed hosts use shared storage. Shared storage is typically on a storage area network (SAN), but can also be implemented using iSCSI and NAS shared storage.

CPU Compatibility
Make sure that the source and destination hosts have a compatible set of processors.
VMotion transfers the running architectural state of a virtual machine between underlying VMware ESX Server systems. VMotion compatibility requires that the processors of the target host be able to resume execution using the equivalent instructions that the processors of the source host were using when suspended. Processor clock speeds and cache sizes, and the number of processor cores may vary, but

processors must come from the same vendor class (Intel or AMD) and same processor family (P3 or P4) to be compatible for migration with VMotion.

Networking Requirements

VMotion requires a Gigabit ethernet network to ensure rapid migration. A dedicated network is recommended to keep VM memory state secure. VMs must have access to the same subnets on the source and destination ESX Servers. VMotion automatically maps VMs to appropriate virtual NICs based on network labels.

Before migrating with VMotion, ensure the following on the source VM:

1. VM have no active connection to a local CD-ROM or floppy image.
2. VM have no access to (CD or floppy) image located in a local datastore.
3. VM is not mapped to a SAN LUN that cannot be seen by the destination ESX Server.
4. VM has no active connection to an internal virtual switch (it should be connected to the production network).

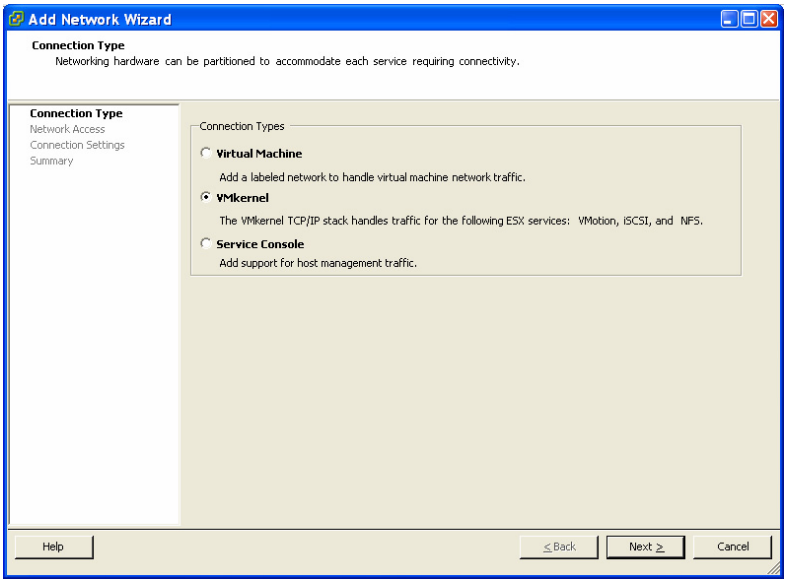
Migration benefits in a BEA WebLogic Server environment

1. Relocate BEA WLS instances (VMs) from one physical system to another without disrupting end user functions.
2. Migrate WLS instances from failing hardware without losing application functionality and configuration.
3. Relocate WLS environments from one storage to another
4. Perform hardware maintenance without disrupting BEA applications running on the system.
5. Use Migration to support distributed resource management and VMware high availability solutions in a virtualized data center.

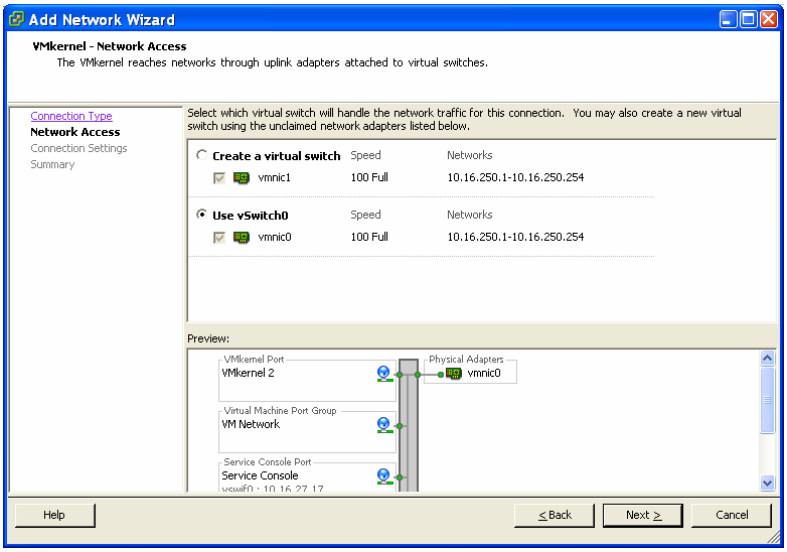
Migration Setup

1. Make sure you have the licenses for VMotion
2. Configure the VMKernel network configuration for VMotion

Click on ESX host (10.16.27.17) → configuration tab →networking
Click “add networking”

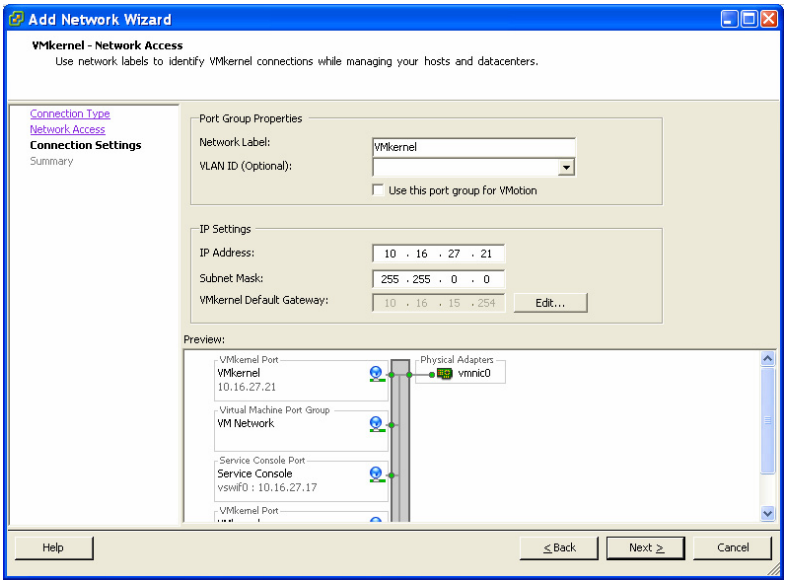


Select “VMKernel”. Click “next”



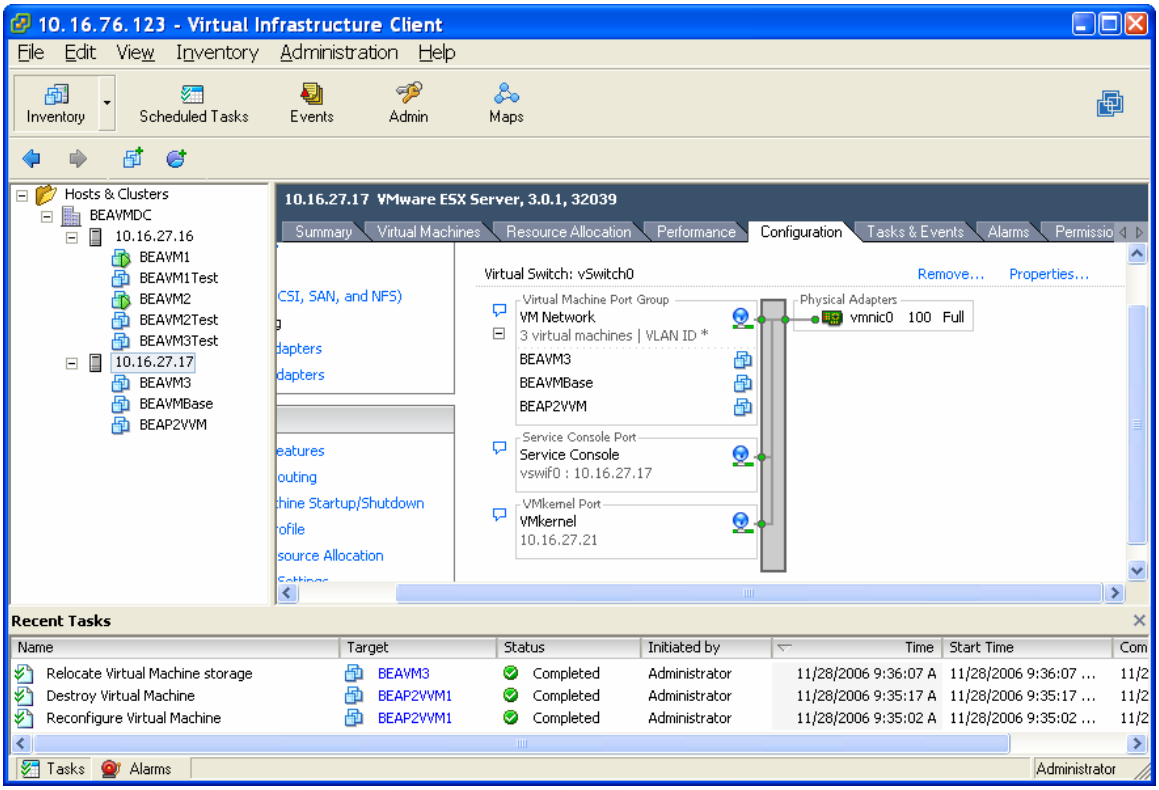
Select “create a virtual switch” to define a new switch for VMKernel. If the lab, we selected “Use vSwitch0” as VMnic0 was the only network configured between the ESX Server hosts.

Note: It is always recommended to keep the VMKernel network on a dedicated Gigabit network connection between the ESX Server hosts.



Provide the IP information (this will be different from the ESX Server service console IP and will be used by VMKernel for VMotion). Make sure to select “use this port group for VMotion”.

Click “finish”.



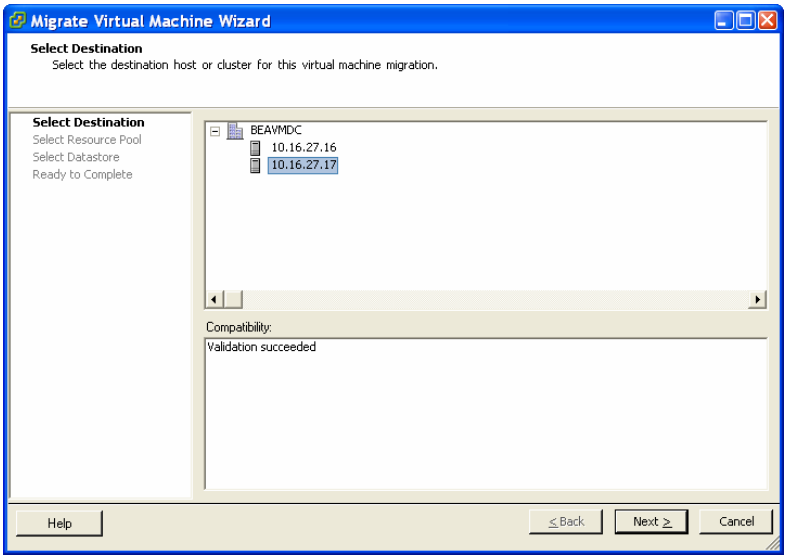
This will create the VMKernel network switch port.

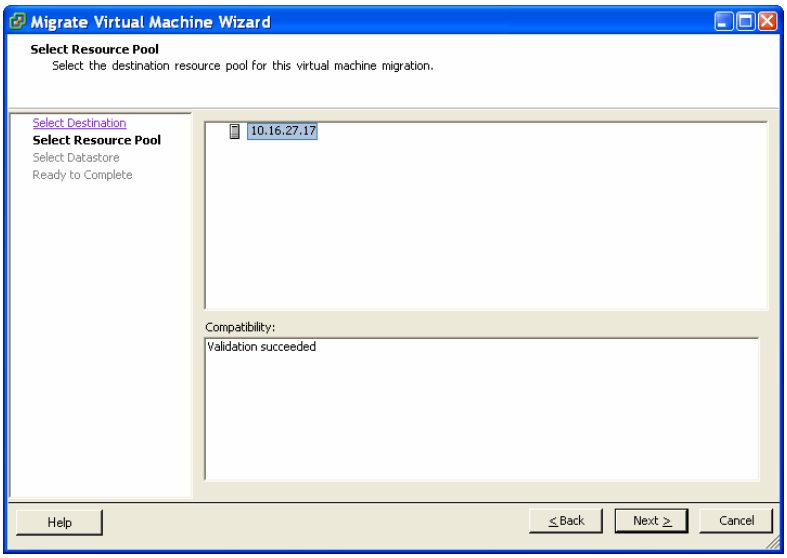
Repeat the steps above to create the VMKernel configuration on the other ESX Server.
Ensure that the physical interfaces on which the vswitch for VMKernel sits are configured to see each other.

In our case, we are using the same NIC for VMotion (demo purposes).

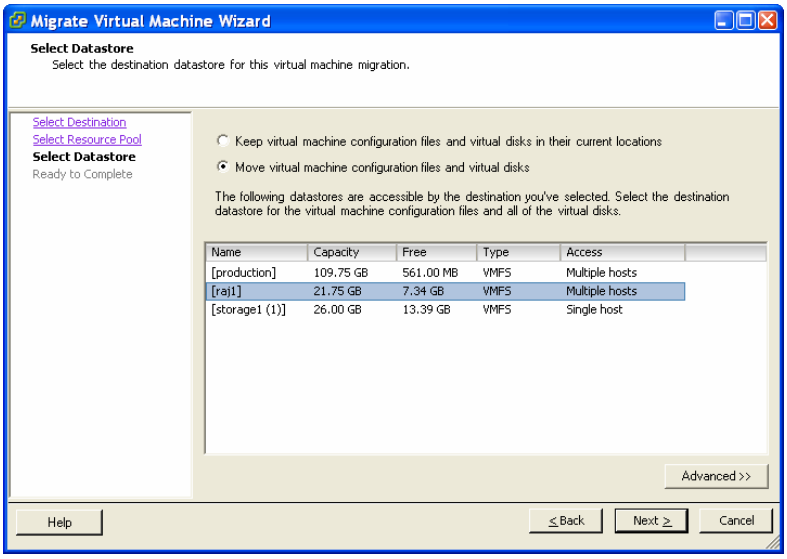
Cold Migration

Shutdown the VM (we used BEAVM3)
Right click on VM → Migrate to move it from one storage location (storage 1) on 10.16.27.17 to a SAN storage location (raj1) with VM still hosted on 10.16.27.17. You can also use cold migration to move the VMs and storage across ESX hosts.

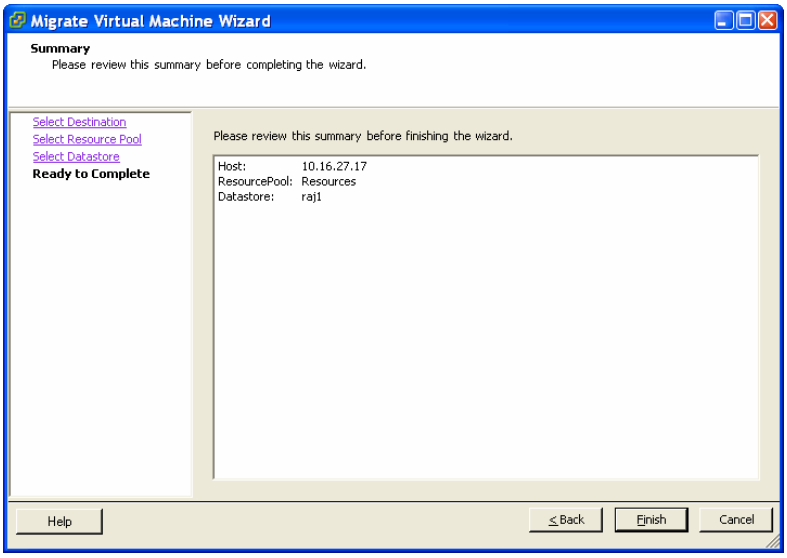




Select “destination resource pool” (we did not create a separate resource pool).


Migrate Virtual Machine Wizard
Select Datastore
Select the destination datastore for this virtual machine migration.
Select Destination
Select Resource Pool
Select Datastore
Ready to Complete
Keep virtual machine configuration files and virtual disks in their current locations
Move virtual machine configuration files and virtual disks
The following datastores are accessible by the destination you've selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.
Name Capacity Free Type Access
[production] 109.75 GB 561.00 MB VMFS Multiple hosts
[raj1] 21.75 GB 7.34 GB VMFS Multiple hosts
[storage1 (1)] 26.00 GB 13.39 GB VMFS Single host
Advanced >>
Help
< Back
Next >
Cancel

This VM was on a local storage and we moved it to SAN (raj1) (to be used later for our live migration test).

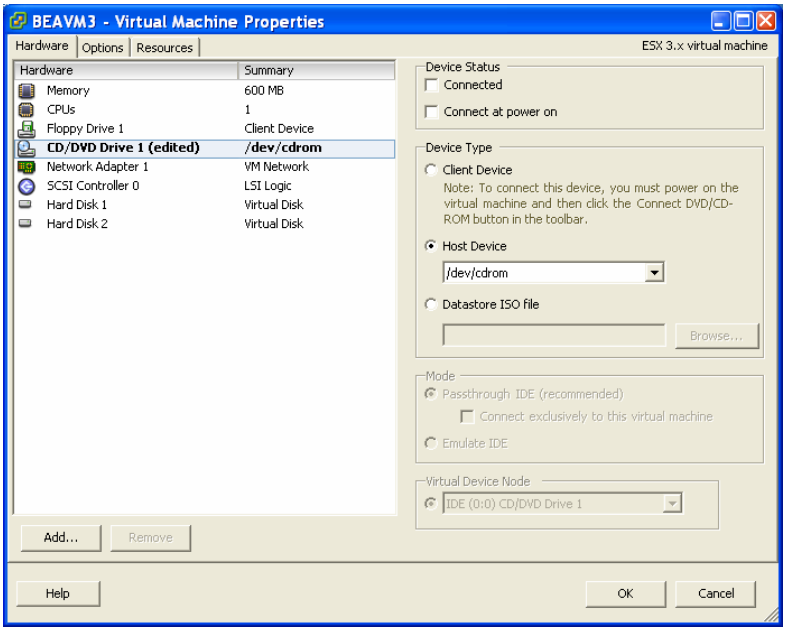


Click “finish” to start the migration of files from one location to another. You can follow progress on “recent tasks” window.

Live Migration with VMotion

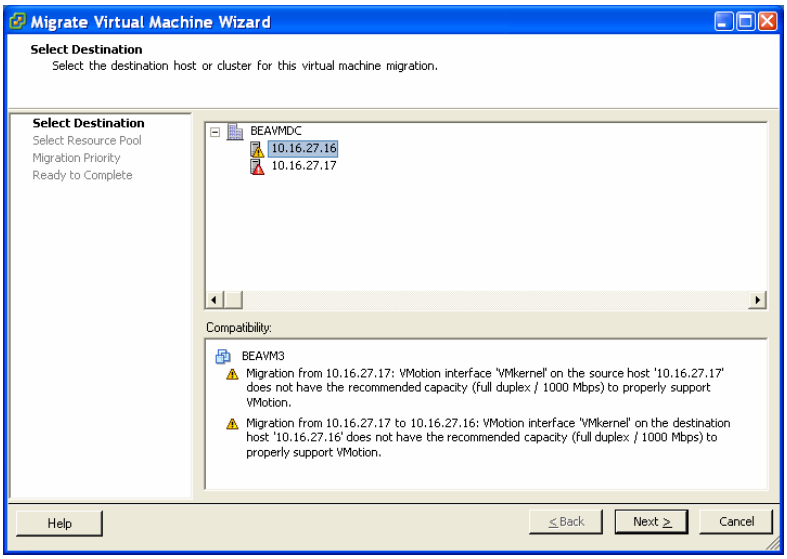
To showcase live migration, we “migrated” BEAVM3 from 10.16.27.17 to 10.16.27.16. We brought BEAVM3 online with the VM disks on SAN.

Note: you can perform live migration with VMotion ONLY if the VM files are located on SAN and accessible by both the source and destination ESX hosts.

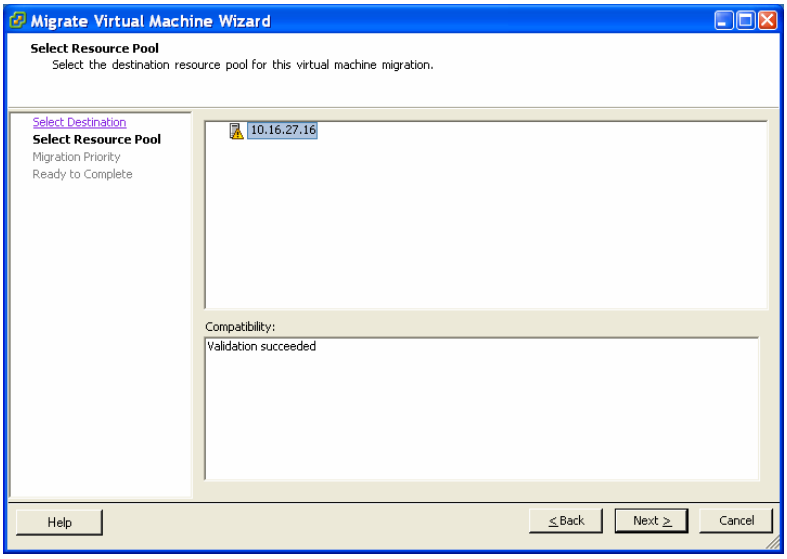


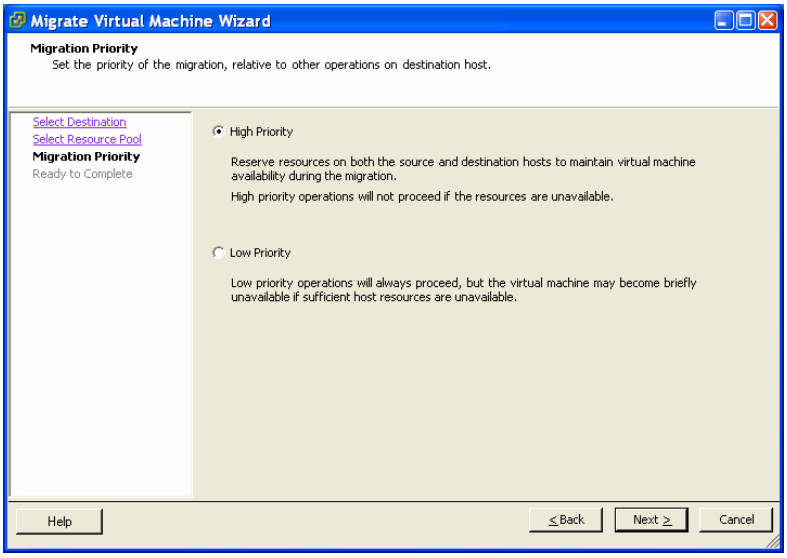
Make sure to disable access to the CD/DVD drive (uncheck “connected” and “connect at power on”).

Right Click on “BEAVM3” → Migrate

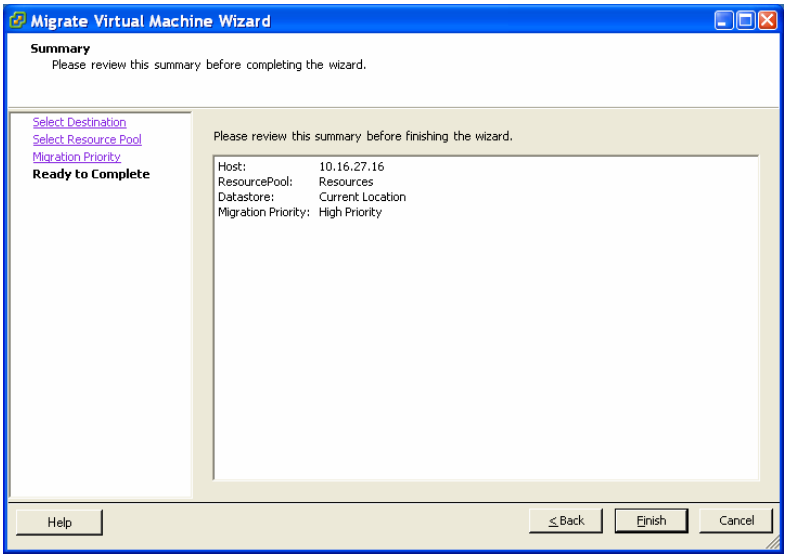

Migrate Virtual Machine Wizard
Select Destination
Select the destination host or cluster for this virtual machine migration.
Select Destination
Select Resource Pool
Migration Priority
Ready to Complete
BEAVMDC
10.16.27.16
10.16.27.17
Compatibility:
BEAVM3
Migration from 10.16.27.17: VMotion interface 'VMkernel' on the source host '10.16.27.17' does not have the recommended capacity (full duplex / 1000 Mbps) to properly support VMotion.
Migration from 10.16.27.17 to 10.16.27.16: VMotion interface 'VMkernel' on the destination host '10.16.27.16' does not have the recommended capacity (full duplex / 1000 Mbps) to properly support VMotion.
Help
< Back
Next >
Cancel

Select Destination host.



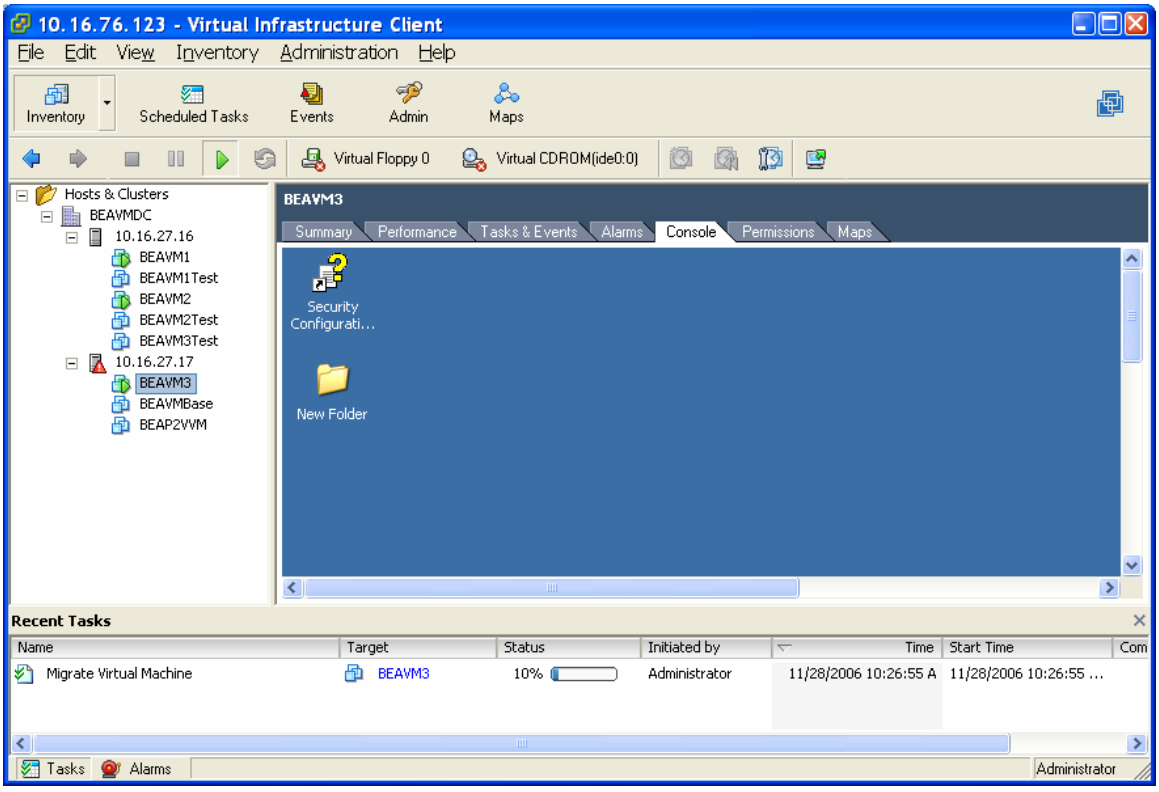

Migrate Virtual Machine Wizard
Migration Priority
Set the priority of the migration, relative to other operations on destination host.
Select Destination
Select Resource Pool
Migration Priority
Ready to Complete
High Priority
Reserve resources on both the source and destination hosts to maintain virtual machine availability during the migration.
High priority operations will not proceed if the resources are unavailable.
Low Priority
Low priority operations will always proceed, but the virtual machine may become briefly unavailable if sufficient host resources are unavailable.
Help
< Back
Next >
Cancel

Select “High Priority”.



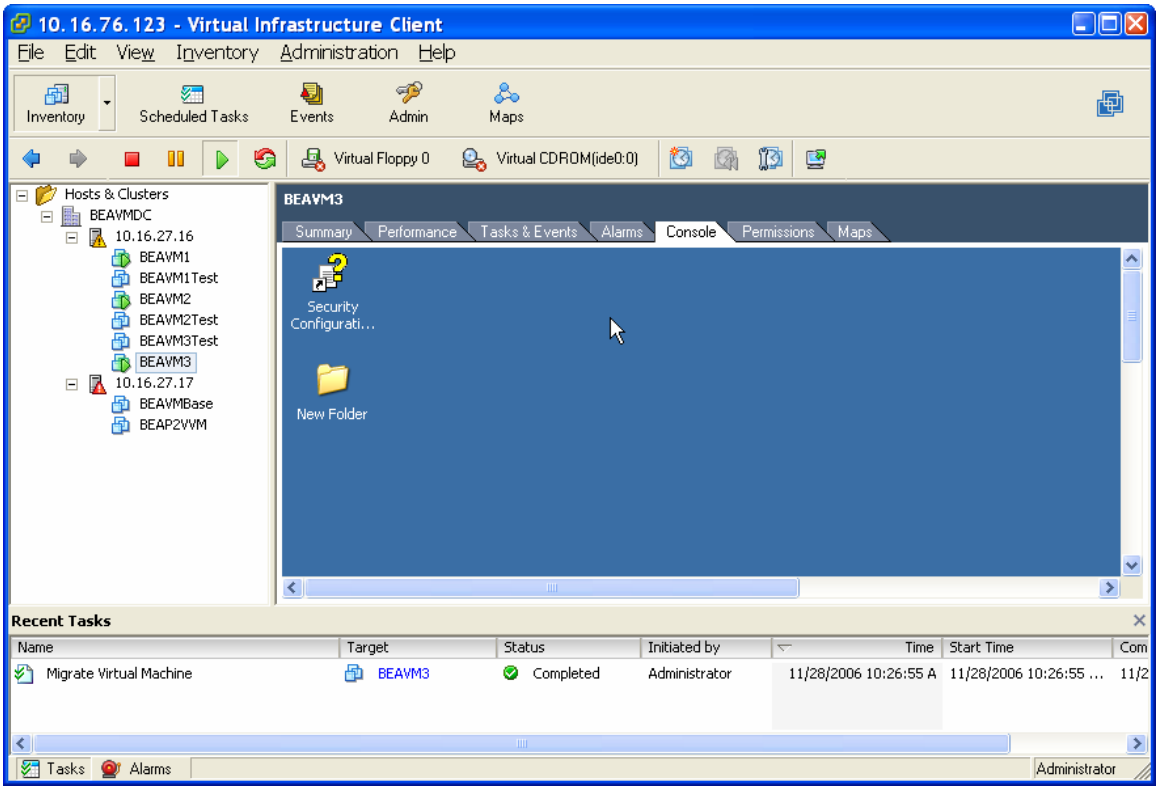
Click “Finish”.

Monitor progress in the “recent tasks” window.



This should successfully migrate the running VM to the destination. All the applications and processes should continue to run as it was prior to the migration.

You should see zero disruption to end users.


10.16.76.123 - Virtual Infrastructure Client
File Edit View Inventory Administration Help
Inventory
Scheduled Tasks
Events
Admin
Maps
Virtual Floppy 0
Virtual CDROM(ide0:0)
Hosts & Clusters
BEAVMDC
10.16.27.16
BEAVM1
BEAVM1Test
BEAVM2
BEAVM2Test
BEAVM3Test
BEAVM3
10.16.27.17
BEAVMBase
BEAP2VM
BEAVM3
Summary Performance Tasks & Events Alarms Console Permissions Maps
Security Configurati...
New Folder
Recent Tasks
Name Target Status Initiated by Time Start Time Com
Migrate Virtual Machine BEAVM3 Completed Administrator 11/28/2006 10:26:55 A 11/28/2006 10:26:55 ... 11/2
Tasks Alarms
Administrator

APPENDIX B: References

VMware Infrastructure 3 Documentation
http://www.vmware.com/support/pubs/vi_pubs.html

BEA WebLogic 9.2 Documentation
http://edocs.bea.com/wls/docs92/index.html

BEA WebLogic 8.1 Documentation
http://edocs.bea.com/wls/docs81/index.html

BEA-VMware Alliance Website
http://www.vmware.com/partners/alliances/

VMware Official Site
www.vmware.com

BEA Official Site
www.bea.com

VMware Technology Network
http://www.vmware.com/vmtn/

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